WEST VIRGINIA DEPARTMENT OF HEALTH
AND
HUMAN RESOURCES

Office of Laboratory Services

MANUAL
OF
QUALITY ASSURANCE

for

Environmental Chemistry Laboratory

and

Environmental Microbiology Laboratory

2009

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Director of Laboratory

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INTRODUCTION

This manual has been assembled to describe the quality assurance system employed by the Office of Laboratory Services Environmental Sections. This quality assurance system is designed to assist all laboratory personnel in producing accurate and precise laboratory results in an efficient, economical, and professional manner. Procedures and policies outlined in this manual are superseded by any subsequent changes in policy and regulation by the Department of Health and Human Resources (DHHR), Division of Personnel, (DOP) or legislative action. Policies and regulations of the DHHR, DOP or the legislative action are maintained by the administrative offices of the main laboratory and are available for all laboratory personnel to review at any time. Other changes may be made by the Environmental Protection Agency (EPA) and should be noted as they are available.

The Environmental Chemistry Section of the Office of Laboratory Services (OLS) is located at Big Chimney, West Virginia. The Environmental Microbiology Section is located within the main laboratory in South Charleston, WV. Both sections are committed to providing quality data and services to their clients. The data produced at these facilities assist clients to meet compliance criteria for drinking water under the Safe Drinking Water Act. These data support activities of the Bureau for Public Health's Office of Environmental Health Services.

It should be recognized that this manual is not all inclusive. Omissions from the manual do not alleviate responsibility on the part of administration or employees to follow policies and procedures. Quality is the responsibility of every employee. All employees will find this manual to be a guide to continued maintenance and improvement of the quality of our laboratory services.

Approved By: _____ _____
Director Date

Revised By: _____ _____
Associate Director Date

_____ _____
Chemistry Program Manager I Date

_____ _____
Microbiology Supervisor Date

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TABLE OF CONTENTS

WV OFFICE OF LABORATORY SERVICES
ENVIRONMENTAL CHEMISTRY and ENVIRONMENTAL MICROBIOLOGY
QUALITY ASSURANCE MANUAL

Freedom_0006049_0003

QUALITY ASSURANCE

Quality Assurance (QA) is an integrated process for management activities involving planning, implementation, assessment, reporting, and quality improvement. Quality Assurance is an integral part of the quality system. Quality Assurance is a planned and systematic approach to provide confidence that requirements for quality are met. The QA Plan is designed to ensure that environmental test results and the delivery of these services are of the highest quality. Quality is measured from the collection of specimens and samples through the reporting of results. The laboratory quality assurance plan shall be incorporated into the quality plan established by the Office of Environmental Health Services, Bureau for Public Health, which is required for the implementation of the Safe Drinking Water Act in West Virginia.

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LABORATORY QUALITY ASSURANCE PLAN

1. PURPOSE AND OVERVIEW

The Office of Laboratory Services Environmental Sections will have a Quality Assurance Plan which ensures that all work is performed in accordance with EPA approved methods and procedures, monitored for compliance, corrected when deviations occur and properly documented.

1.1. At a minimum, the Quality Assurance Plan will consist of the following elements:

- A system to document problems that occur as a result of breakdown in communication between the laboratory and the client who orders and receives test results;
- A system to assure that complaints and/or problems are documented and investigated;
- An ongoing mechanism for monitoring and evaluating the test system;
- An ongoing mechanism to monitor corrective action taken for any unacceptable, unsatisfactory or unsuccessful proficiency testing results;
- An ongoing mechanism to evaluate the effectiveness of the laboratory's policies and procedures for ensuring employee competency;
- A mechanism for documenting and assessing problems identified during quality assurance reviews and audits.

2. AUTHORITY/RESPONSIBILITY FOR QUALITY ASSURANCE PLANS

2.1. OLS Administration (Director, Associate Director, Program Manager/Supervisor,) will support quality assurance by encouraging excellence in measurement and assist in providing the physical and mental environment conducive to its achievement. To accomplish this purpose, OLS Administration shall:

- Evaluate the selection and use of methods/procedures to ensure that all mandates and recommendations of EPA are met;
- Ensure that analysts receive training and are qualified for assigned work;
- Delegate authority to implement QA plans;
- Ensure that action is taken to implement corrective measures;
- Communicate changes in policy and in state/federal regulations.

2.2. Quality Assurance Committee shall be established. All staff in the Environmental Chemistry and Microbiology Sections will serve on the respective Committee. The section supervisor / program manager will serve as the Quality Assurance (QA) Officer in each section. The QA Officer or designee shall be responsible for the following:

- Conducting periodic staff meetings to review laboratory operations and quality assurance;
- Ensuring that each section's QA Manual is current and complete;
- Gathering QA information and making recommendations for QA;
- Serving as a liaison between the administration and other staff.

2.3. Responsibility of Program Manager/Supervisor

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- Coordinate section activities to ensure compliance with federal and state regulations;
- Assist in the planning/development of QA policies and practices;
- Monitor all phases of laboratory sample integrity, instrument calibration and maintenance, analytical procedures, controls and corrective action, documentation, analyses of reports performed in the laboratory for compliance with technical procedures and QA plans;
- Serve as the section representative, or designate an individual, to serve on the OLS Laboratory Management Team at the main laboratory in South Charleston, WV. Other staff may be assigned QA duties and serve at the discretion of the program manager/supervisor;
- Revise and update technical and other section procedures when changes are necessary and review periodically;
- Perform operations in accordance with applicable procedures;
- Keep administration advised of problems, questionable results, and unusual aspects of laboratory samples, safety issues and laboratory accidents.

2.4. Responsibility of all other staff

- Perform operations in accordance with applicable procedures;
- Keep program manager/supervisor advised of problems, questionable results, and unusual aspects of laboratory samples, safety issues and laboratory accidents;
- Make recommendations and suggestions for improvements to section program manager/supervisor;
- Perform all work in a careful, responsible and safe manner.

3. COMPONENTS OF QA PLAN

The Manual of Quality Assurance will include the elements to monitor and evaluate pre-analytical, analytical and post-analytical activities. Each laboratory section will incorporate these elements and others that are critical to the functions of the section and describe how they will be done.

3.1. Personnel Qualifications and Training: Personnel shall be qualified by education, training and/or experience for a particular task. Personnel qualifications will be documented and maintained by the Director of the Office of Laboratory Services. Procedures for evaluation will be adopted and in keeping with state and federal labor practices. This is outlined in Section I.

3.2. Safety Procedures: These procedures should ensure compliance with OSHA and other state and federal guidelines where applicable. The Safety Manual prepared by the main Office of Laboratory Services in South Charleston will be adopted. A member of the Environmental Chemistry Section will serve on the OLS Safety Committee and act as liaison to the OLS Safety Officer. A Safety Focus Group will be established at the Environmental Chemistry Laboratory. The Safety Focus Group will address safety issues specific to Environmental Chemistry and report to the OLS Safety Committee. Procedures will include guidelines for:

- Employee safety orientation and training
- Protective clothing and equipment
- Housekeeping

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3.3. Standard Operating Procedures Manual (SOP): The SOP Manual is a document that states which and how tests are performed and references the EPA approved method. SOPs shall be signed and dated by the analyst author(s) and by the section supervisor and / or Quality Assurance Officer. Dates of revision will be documented. Procedure manuals are essential to each operating section and serve purposes which include: 1) Training of new employees, 2) Assurance that procedures are performed consistently by all employees, 3) Troubleshooting unexpected results, and 4) Keeping employees aware of new and revised procedures.

3.3.1. Elements of the Standard Operating Procedure (SOP): The standard operating procedures testing manual of environmental samples should contain the following elements:

3.3.1.1. Requirements*for processing and criteria for sample rejection.*Criteria for unacceptable samples: quantity not sufficient, improper preservation, etc. Also include:

- Sample type
- Sample bottle
- Sample volume
- Holding time

3.3.1.2. Test procedure

- Test Method Number (EPA Standard Methods)
- Step-by-step instructions
- Directions for performing test calculations
- How to interpret and read test results

3.3.1.3. Qualification of Analysts

- Initial Demonstration of Capability (IDC)
- IDC for precision and accuracy
- IDL / MDL studies
- Passing an unknown

3.3.1.4. Preparation of spikes, standards, QC samples, reagents, and other materials used in the test (or source for ordering).

- All reagents, controls, etc., required for testing and indicate location
- Reagent storage instructions
- Step-by-step instructions for reagent preparation include any safety precautions and expiration date.

3.3.1.5. Calibration and calibration verification procedures

- Step-by-step instructions for instrument calibration
- Include the identity, concentration, number of standards, and calibration frequency

3.3.1.6. Calibration range of test results and minimum reporting limit

- Use calibration data as verification of this range

3.3.1.7. Quality Control procedures

- State identity, level and frequency of control (QC standards, spikes, etc.)
- Explain preparation of controls and handling
- Give testing control step-by-step instructions
- State control limits
- Describe how quality control results are recorded.

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3.3.1.8. Remedial action to be taken when calibration and control results deviate from expected values or patterns
- State corrective action such as recalibration, trouble-shooting, etc.
- Documentation of corrective actions

3.3.1.9. Limitations in the test methodology
- List interfering substances or conditions
- Specify other common sources of error that could cause erroneous test results

3.3.1.10. Reporting Results
- Significant figures and MRLs
- Time limits for reporting MCL exceedances
- Reference to LIMS SOP for entering data

3.3.1.11. References
- Pertinent literature method references
- Include manufacturer's product literature, textbooks, journals, etc.
- State alternate procedure to use during technician or instrument downtime

3.4. Instrument and Equipment Calibrations

3.4.1. Instrument and equipment calibration must be carried out and documented in accordance to manufacturer guidelines and/or methodology. This is not limited to developing an analyte calibration curve but shall include any established initial performance acceptance criteria requirements. This is outlined is Section X.

3.5. Maintenance Procedures

3.5.1. Routine preventive maintenance (in-house or contracted) procedures and frequencies shall be established for all equipment and records will be maintained.

3.5.2. Unscheduled maintenance (downtime) will be documented to record problem (s) and corrective actions(s) taken to restore equipment to full service. This is outlined is Section XV.

3.6. Standards, Reagents, Glassware and Special Supplies

3.6.1. Glassware cleaning, preparation, storage and shelf life of standards and quality grade of reagents, media and supplies shall be determined for the technical procedure in which they are used.

3.6.2. Reagents, standards, stock solutions and special supplies will be properly labeled and will not be used after the expiration date.

3.6.3. If purchasing regulations require the change of brands of any reagent, standards and special supplies, the OLS Fiscal Section will notify the technical section immediately for verification of the product quality.

3.7. Technical Procedures

3.7.1. All routine technical procedures will be current, approved and performed exactly as written in the SOP Manual and the referenced method.

3.7.2. Procedures used to determine the limits of reliable measurement (detection limits, quantitation limits, etc.) will be clearly written, explained and referenced.

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3.7.3. In-house technical procedures will have validation documentation if appropriate. The official or validated references will also be cited. Validation data, such as precision, bias, specificity, method sensitivity, etc. will be established by recognized, referenced techniques.

3.7.4. If a technical procedure produces a hazardous waste, the procedure will identify the hazardous waste and the method of disposal. All hazardous materials will be handled and disposed according to laboratory safety policy.

3.7.5. Method manuals will be available in the laboratory work area.

3.8. Data Management

3.8.1. Where applicable, documented protocols will be used to ensure that raw data are calculated correctly, converted to appropriate units, transcribed correctly, reported to clients and stored properly. All systems should be backed up and verified to avoid loss or modification of data. Adequate measures should be taken to avoid tampering with stored data. Procedures for archival storage and disposal of data records will be documented. All data will be subject to review by administration, supervisors and/or peers. This is outlined in Section XIII.

3.9. Internal Quality Control (QC Sample)

3.9.1. All internal QC will be documented and available. Documentation should be done in such a manner that it can be easily reviewed by staff, administration, or certification officers. Documentation of quality should be available on a daily basis. This documentation shall include the action taken to correct out-of-control situations. This is outlined in Section XVI.

3.10. External Quality Control – PT Studies

3.10.1. All Proficiency Testing Study data results (proficiency testing, performance evaluation studies, collaborative studies, audits, etc.) will be documented and available. Master records will be maintained by the Program Manager/Supervisor's Office.

3.10.2. The QA Manual will have a section describing the proficiency testing performed.

3.10.3. Each section will identify and document the action to be taken when proficiency testing results are unacceptable. This documentation will, in part, be done by filing a Corrective Action Report (CAR) with the Laboratory Program Manager/ Supervisor and the Laboratory Director. Copies of the CAR will be filed with unacceptable Proficiency Testing Study and with the section records. The CAR will also be forwarded to the EPA Regional certifying authority within 30 days of receiving an unacceptable report. This is outlined is Section XVII.

3.11. Corrective Action Contingencies

3.11.1. Procedures shall be established to initiate corrective action for discrepancies in data and unacceptable analytical results. All actions shall be documented.

3.12. Waste Disposal

3.12.1. All laboratory waste will be handled appropriately as to classification whether hazardous or non-hazardous.

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3.12.2. Hazardous waste (biological, chemical and physical) will be handled, transported, stored, treated and/or disposed by documented procedures using appropriate disposal companies.

4. QUALITY ASSURANCE MONITORING

4.1. Performance and Systems Audits: With guidance of the Quality Assurance Committee, systems for performance and compliance monitoring will be instituted. A QA Audit Team or designee will be identified to conduct on-site audits of performance and systems operations. Appropriate administrative leadership will be responsible for developing specific audit procedures.

4.1.1. This performance audit is an independent check by a supervisor, a team or other person designated by the laboratory director or associate director or the QA committee to evaluate the data produced by a section's analytical system, or to evaluate a specific service provided by a non-technical area (efficiency of sample reporting, purchasing, etc.)

4.1.2. The systems audit is an on-site inspection or assessment of a section's quality system. These checks may be made by the supervisor, a team, or other person designated by the director or the QA committee.

4.2. Procedure for Systems Audit

4.2.1. Preparation

- An Audit Team or person will be selected and the team will agree on the emphasis for the on-site survey.
- The section to be audited should be notified verbally and in writing two weeks (minimum) prior to the audit. However, prior notification to the section can be waived at the discretion of the Director or Associate Director.
- A preliminary review of the section's technical procedures, proficiency testing or performance review results, qualifications, training and duties of personnel should be made prior to an on-site review of the area.
- A checklist will be developed to state the purpose of the audit and to cover the relevant elements. These items will be reviewed to determine their levels of implementation, adequacy, and improvement within the QA Program. This checklist should provide a means of structure for the audit; the checklist is not all inclusive.

4.2.2. Performance of Audit should include, but is not restricted to:

- Interviewing personnel
- Observation of the section's operation for conformance to QA Plans and Procedures
- Evaluation of QC data
- Verification of calculations
- Verification of calibrations
- Review of worksheets
- Tracking of lab samples
- Verification of storage conditions
- Verification that sample analyses are performed within the required time frames

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- Verification that expiration dates are not being exceeded for samples, standards, reagents, media, QC check samples, etc.

4.2.3. Audit Closure: At the conclusion of the audit, a preliminary close-out meeting should be held with the section to discuss the audit.

4.2.4. Audit Report: The Audit Team should prepare a written report within 45 days of the audit. The report should be brief, concise and understandable to those involved. The findings should include improvements or outstanding performance as well as deviations. The purpose of the audit is to improve performance, provide education, and verify that the laboratory section is maintaining the required standard of quality.

The initial report should be presented to the section supervisor for discussion and agreement of findings between the supervisor and the persons performing the audit. A final, dated, written report should be presented to the director and associate director and to the QA Committee.

The QA audit report will request a written plan of correction for any noted deficiencies. The plan-of-correction report will outline the steps taken to correct the deficiency.

4.2.5. Corrective Action Report: This report should be prepared by the section supervisor or designee will be forwarded to the Audit Team leader and director within the time frames specified by the Audit Team. Staff will be notified if the QA audit cites problems that may require assessment of previously reported data or significant problems that may affect clients.

4.3. Ethics Training: Annually, the Quality Assurance Officer for the section will meet with the staff and discuss and review ethics policies and guidelines as disseminated and recommended by the EPA. This review will be documented with signatures of the staff.

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SECTION I

LABORATORY ORGANIZATION AND RESPONSIBILITY

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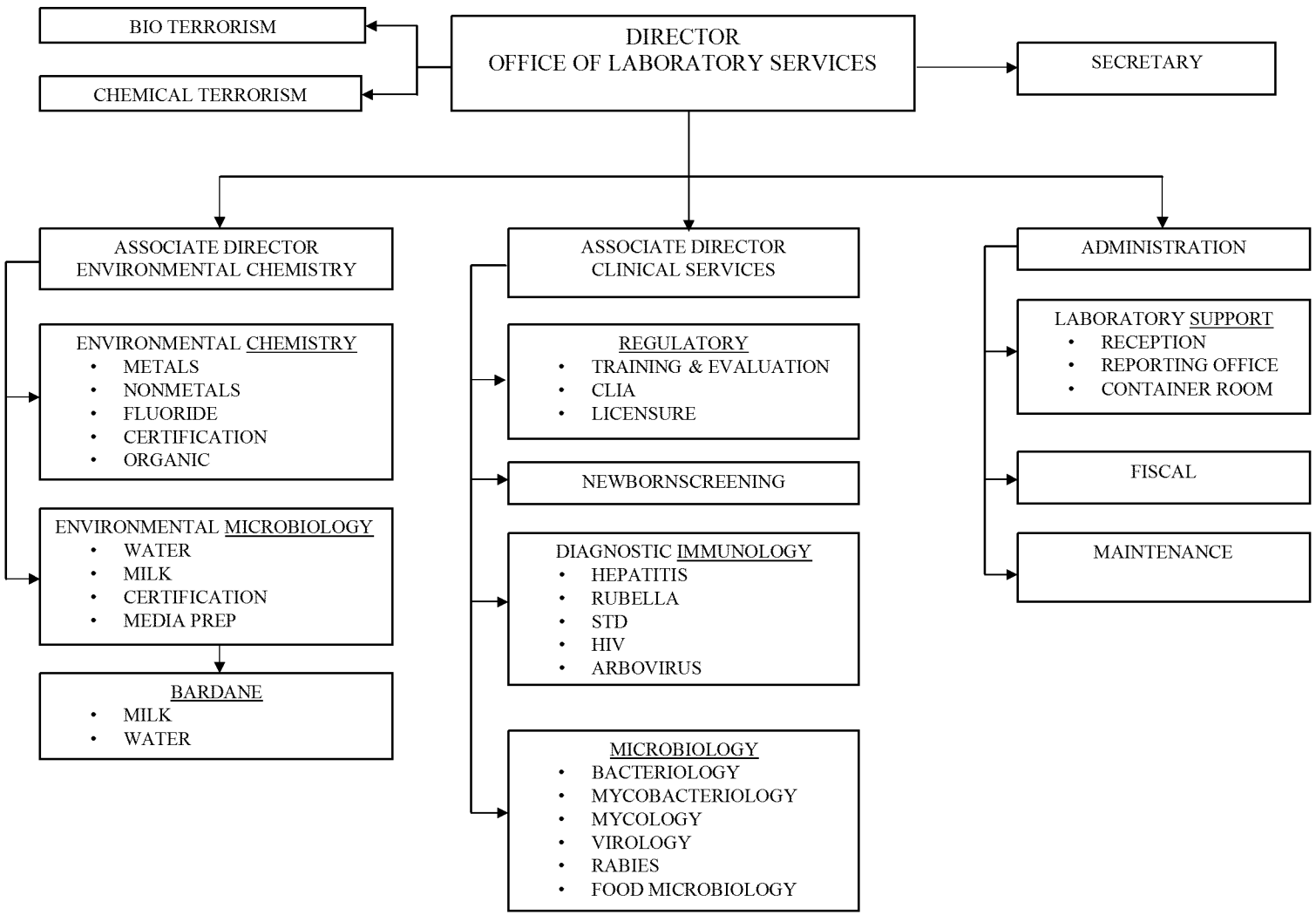

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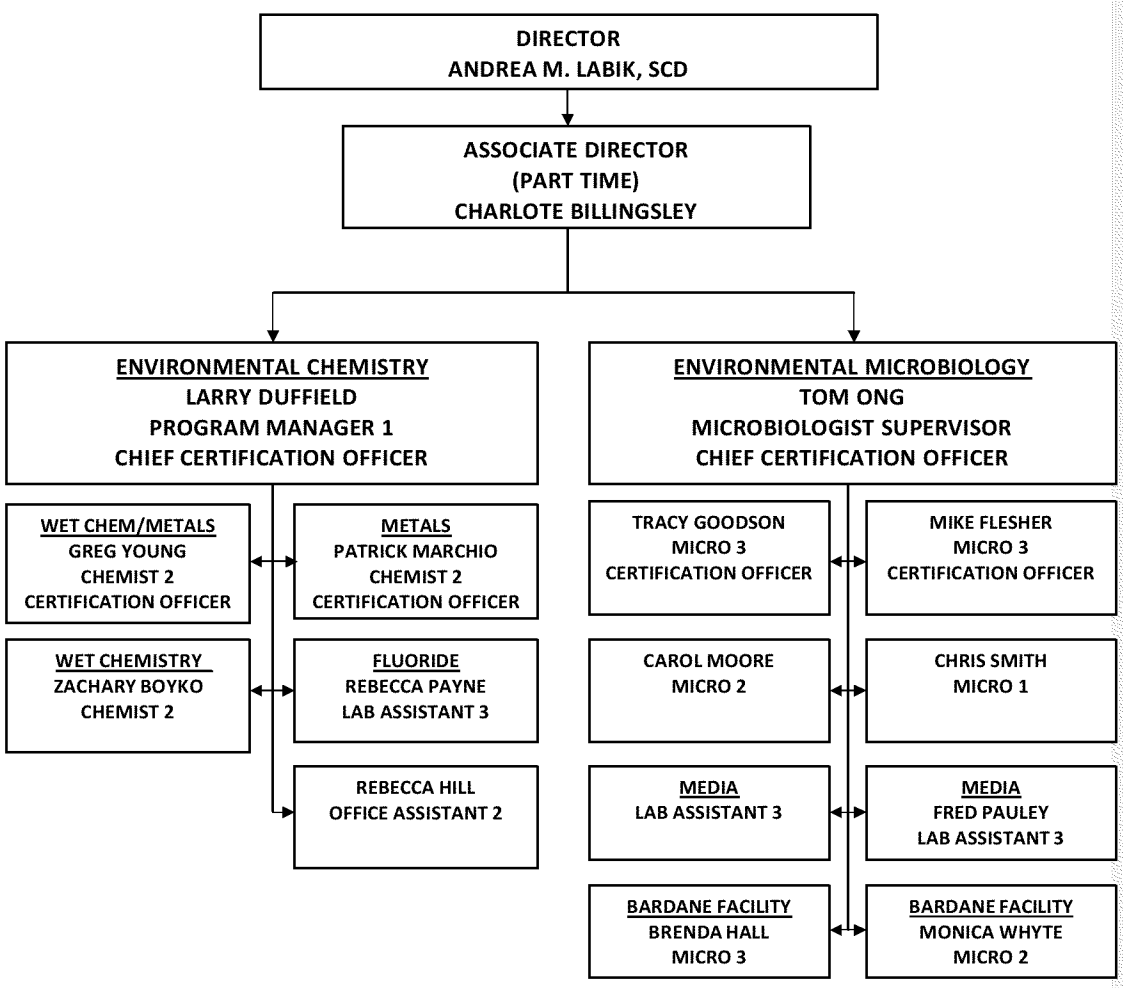
WEST VIRGINIA BUREAU FOR PUBLIC HEALTH
OFFICE OF LABORATORY SERVICES

ENVIRONMENTAL LABORATORIES



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ENVIRONMENTAL CHEMISTRY and ENVIRONMENTAL MICROBIOLOGY LABORATORIES

PERSONNEL JOB DESCRIPTIONS

Dr. Andrea Labik, ScD., Office Director III: Provides overall direction and supervision to the Office of Laboratory Services (OLS) of the State of West Virginia which includes clinical diagnostic work and Environmental Laboratory activities. Reports directly to the Commissioner of the Bureau for Public Health.

Charlotte Billingsley, Part time Associate Director: Provides direction and supervision for Environmental Laboratories including chemistry, and microbiology, milk testing. Reports to the laboratory Office Director.

Larry A. Duffield, Program Manager I: Is responsible for the Environmental Chemistry Section and serves as the Chief EPA Certification Officer with responsibility for oversight of the Chemistry Program for West Virginia's Safe Drinking Water Program (SDWA). Position serves as Quality Assurance Officer for chemistry and reports to the Associate Director for Office of Laboratory Services (OLS) and the OLS Director. Certified for Organics and Inorganic Analytes.

Gregory Young, Chemist II: Works in the Metals and Wet Chemistry Sections, providing technical and analytical support to a Chemist II and a Laboratory Assistant III. Serves as liaison with the Chemical Terrorism Laboratory, developing new methods. Serves as StarLIMS development and troubleshooting liaison. Certified by EPA for Inorganic and Organic analytes and assists the Program Manager with on-site surveys and record keeping. Reports to Program Manager.

Patrick Marchio, Chemist II: Works in the Metals Section. Certified by EPA for Inorganic analytes. Reports to the Program Manager.

Zachary Boyko, Chemist II: Works in the Wet Chemistry Section. Certified by EPA for Inorganic analytes. Reports to the Program Manager.

Becky Payne, Laboratory Assistant III: Performs Fluoride Tests for the Bureau of Public Health's Pediatric Fluoride Program and for the Public Water Systems. Assists with office duties as needed. Reports to the Program Manager.

Rebecca Hill, Office Assistant II: Performs general office tasks, maintains Certification Program records, sample records, and reports test results. Reports to Program Manager.

Tom Ong, Microbiologist Supervisor (Laboratory Certification Officer): Provides overall direction and supervision in planning, directing, and coordinating the microbiology laboratory; provides consultative and training services. Serves as the Quality Assurance Officer and Certification Officer for Microbiology. Reports to the Associate Director.

Mike Flesher, Microbiologist III (Laboratory Certification Officer):
Under limited supervision perform work at an advanced level by providing technical assistance and consultation to other microbiological personnel. Meet the standards of the

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Safe Drinking Water Act and the requirements of the Inter/Intra-State Milk shippers. Conduct complex and advanced microbiological examinations. Maintain required State and Federal documentation. Responsible for Quality Assurance, Safety and preventative maintenance for the Environmental Microbiology Section. Conduct on-site surveys of drinking water laboratories, prepare final reports and determinations of laboratories certification status. Monitor corrective actions to deviations found during surveys. Plan, prepare and distribute Proficiency Test Samples to other analysts throughout the state and interpret the results. Trains and supervises subordinate microbiological laboratory personnel.

Tracy Goodson, Microbiologist III (Laboratory Certification Officer): Provides laboratory specimen testing and allied services that are consistent with the federal/state program requirements to ensure the sanitary quality of milk and water for intra/interstate consumers/users. Examine samples as described in *Standard Methods for the Examination of Dairy Products*, Standard Methods for the *Examination of Water and Waste Water*, memoranda or guidelines from the Food and Drug Administration (FDA), U.S. Environmental Protection Agency (USEPA) and related agencies and Federal Registers. Provides oversight to the technical aspects of the Media and Glassware Preparation Unit.

Brenda Hall, Microbiologist III: Same as the above description, but does not serve as a certification officer. Oversees and directs out posted laboratory.

Carol Moore, Monica Whyte, Microbiologist II: Performs full performance professional microbiological examinations of drinking water. Works under the general supervision of a higher level microbiologist. Makes qualitative and quantitative bacteriological analyses of drinking water. Uses computer for entry of lab results and quality control.

Chris Smith, Microbiologist I: Performs under general supervision, works at the advanced level by conducting varied technical laboratory tests, analyses, complex and difficult laboratory tasks and examinations. Provides comprehensive assistance to technical or professional personnel. May have lead worker responsibility. Performs related work as required.

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WEST VIRGINIA LABORATORY

CERTIFICATION PROGRAM FOR SDWA

Certification Officers work under the direction of the Laboratory Director and the Associate Director. The Laboratory Director has direct access to the Commissioner of the Bureau for Public Health

All Personnel are classified and qualified for their job title by the West Virginia Department of Personnel. All persons must possess acceptable knowledge through education, training and/or experience. Persons qualifying as Certification Officers must have successfully completed the training courses offered by EPA in their specific disciplines(s).

MANAGEMENT STAFF

Laboratory Director – Andrea Labik, Sc.D.
Associate Director (Part Time) – Charlotte Billingsley, M.S.
Environmental Chemistry Program Manager – Larry Duffield, B.S.
Microbiology Supervisor – Thomas Ong, B.S.

CERTIFICATION STAFF - CHEMISTRY

Larry Duffield – Chief Certification Officer for Inorganic and Organic Tests
Gregory Young – Certification Officer for Inorganic and Organic Tests
Patrick Marchio – Certification Officer for Inorganic Test
Zachary Boyko – Certification Officer for Inorganic Tests

CERTIFICATION STAFF - MICROBIOLOGY

Thomas Ong – Chief Certification Officer
Tracy Goodson – Certification Officer
Mike Flesher – Certification Officer

The supervisor will maintain employee job descriptions and make them available to anyone needing that information. The individual employee will also maintain a copy of the job description. Both the supervisor and the employee should periodically review the job description.

CERTIFICATION PRAGRAM STANDARD OPERATING PROCEDURE

The Environmental Chemistry and Microbiology sections shall maintain SOPs for their respective certification programs. It will be signed by the Chief Certification Officers and the Laboratory Director. These SOPs shall be based upon the criteria in the most recent edition of the EPA's Manual for the

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Certification of Laboratories Analyzing Drinking Water (CLADW). The SOPs will be reviewed and updated periodically.

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SECTION II

STANDARD OPERATING PROCEDURE MANUALS AND ANALYTICAL METHODS

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STANDARD OPERATING PROCEDURES MANUAL
And
ANALYTICAL METHODS

Each employee will be responsible for the Standard Operating Procedures (SOPs) required for their test(s). The supervisor and employee will periodically review the procedures to make certain they are current and up-to-date. The supervisor and employee will sign-off on the SOPs following review. All test methods referenced must be approved by EPA and SOPs must meet the criteria listed in the most recent Manual for the Certification of Laboratories Analyzing Drinking Water published by the EPA and requirements within this Quality Assurance Manual

All SOPs used in the laboratory for regulatory analyses shall be based upon and referenced to EPA approved methodologies list in 40 CFR Part 141. All signed and approved SOPs will be maintained in the Program Manager/Supervisor's Office and copies of the SOPs will be provided to each section.

The following page lists the Standard Operating Procedures used by the Environmental Sections of the Office of Laboratory Services.

STANDARD OPERATING PROCEDURES

	Project # Name/Revision	Location
Laboratory Safety Manual		
Chemistry SDWA Laboratory Certification Program SOP	Chemistry Laboratory Certification SOP / Revision 3.0	OFFICE
Chemistry Pipette, Thermometer, Balance	SOPWET01100 / Revision 1.0	WET LAB
STARLIMS	SOPLIMS00100 / Revision 1.0	OFFICE

WATER MICROBIOLOGY OPERATING PROCEDURES

Parameter	Method Number/Revision/Edition	Methodology	Location
Total Coliforms	SM 9221 B SM 9222 B SM 9223 B	Multi Tube Fermentation Membrane Filtration Colilert/Colilert-18/Quanti Tray	WATER LAB
Fecal Coliforms	SM 9221 E	EC Medium	WATER LAB
E. coli	SM 9223 B	Colilert/Colilert-18/Quanti Tray	WATER LAB
Heterotrophic Bacteria	SM 9215 B	Pour Plate Method	MILK LAB

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INORGANIC STANDARD OPERATING PROCEDURES

Parameter	Method Number/Revision/Edition	Methodology	Project # Name/Revision	Location
Aluminum	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Aluminum	EPA 200.7 R4.4	INDUCTIVELYCOUPLED PLASMA ATOMIC EMISSION	Al-200.7 / Rev 2.0	METALS LAB
Antimony	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Arsenic	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Barium	EPA 200.7 R4.4	INDUCTIVELYCOUPLED PLASMA ATOMIC EMISSION	SOPMET00300 / Rev 2.0	METALS LAB
Beryllium	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Cadmium	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Chromium	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Copper	SM 18th ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Copper	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Iron	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Lead	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Magnesium	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Manganese	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Mercury	EPA 245.1 R3.0	COLD VAPOR ATOMIC ABSORPTION	Cetac_Hg_245.1 / Rev 1.0	METALS LAB
Nickel	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Selenium	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Silver	SM 18TH ED 3113B	ELECTROTHERMAL ATOMIC ABSORPTION	SOPMET00200 / Rev 2.0	METALS LAB
Sodium	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Zinc	SM 18TH ED 3111B	AIR-ACETYLENE FLAME ATOMIC ABSORPTION	SM3111B-2006 / Rev 1.0	METALS LAB
Alkalinity, Total	SM 18TH ED 2320B	TITRATION	SOPWET00400 / Rev 3.0	WET LAB
Calcium	SM 18TH ED 3500CaD	EDTA TITRIMETRIC	SOPWET00500 / Rev 2.0	WET LAB
Calcium Hardness	SM 18TH ED 3500CaD	EDTA TITRIMETRIC	SOPWET00500 / Rev 2.0	WET LAB
Chloride	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Conductivity (µmhos/cm)	SM 18TH ED 2510B	ELECTRODE	SOPWET00100 / Rev 1.0	WET LAB
Cyanide, Free	SM 18TH ED 4500CN-F	ION SELECTIVE ELECTRODE	SOPWET00600 / Rev 1.0	WET LAB
Fluoride	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Fluoride	SM 18TH ED 4500F-C	ION SELECTIVE ELECTRODE	Fluoride2009SOP / Rev 1.0	FluorideLAB
Hydrogen Sulfide	EPA 376.2 R	METHYLENE BLUE, COLORIMETRIC	SOPWET01100	WET LAB
Ortho-Phosphate	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Nitrate – N	EPA 353.2 R2.0	CADMIUM REDUCTION	SOPWET00300 / Rev 2.0	WET LAB
Nitrate – N	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Nitrate/Nitrite – N	EPA 353.2 R2.0	CADMIUM REDUCTION	SOPWET00300 / Rev 2.0	WET LAB
Nitrite – N	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Nitrite – N	EPA 353.2 R2.0	CADMIUM REDUCTION	SOPWET00300 / Rev 2.0	WET LAB
pH (pH Units)	EPA 150.1	ELECTROMETRIC	SOPWET00700 / Rev 3.0	WET LAB
Sulfate	EPA 300.0 R2.1	ION CHROMATOGRAPHY	SOPWET00200 / Rev 4.0	WET LAB
Total Hardness	SM 18TH ED 2340C	EDTA TITRIMETRIC	SOPWET00900 / Rev 2.0	WET LAB
Total Dissolved Solids	SM 18TH ED 2540C	GRAVIMETRIC	SOPWET00800 / Rev 2.0	WET LAB
Turbidity (NTU)	EPA 180.1 R2.0	NEPHELOMETRY	SOPWET01000 / Rev 2.0	WET LAB
TOC	EPA 415.3 R1.1	PERSULFATE -ULTRAVIOLET OXIDATION	TOCSOP / Rev 1.0	METALS LAB
SUVA	EPA 4153 R1.1	SPECTROPHOTOMETER 254nm	SUVASOP / Rev 1.0	METALS LAB
Surfactants (LAS)	HACH 8028	CRYSTAL VIOLET METHOD	DOC316.53.01138	WET LAB

Freedom_0006049_0021

SECTION III

WEST VIRGINIA CERTIFIED ANALYTES FOR DRINKING WATER

Freedom_0006049_0022

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

Laboratory Certification Status Certificate

January 1, 2009 – December 31, 2009

STATE: West Virginia

Up-Dates: 7/11/07 based on on-site performed September 19-20, 2006 with update reports dated 12/20/06 and 2/15/07. This included additional certification for Cu by SM 3111B and Hg by EPA Method 245.1. Also, 12-3-07 update for interim certification/approval PO4, NO2, NO3 by 300.0 and AL 200.7.

LABORATORY PROFICIENCY TESTING (PT) SAMPLE PERFORMANCE, LATEST ON-SITE REVIEW and CERTIFICATIONS

John R. Pomponio, Director
Environmental Assessment and Innovation Division
Water Supply Laboratory Certification Authority

LEGEND

C - Certified	PC - Provisionally Certified	IC - Interim Certified
NC - Not Certified	A - Acceptable	NA - Not Acceptable
ND - No Data Submitted	AP - Approved	NP - Not Approved
PP – Provisionally Approved	IP-Interim Approved	

Freedom_0006049_0023

INORGANIC CHEMICALS:

CONTAMINANT	2009							
	OVERALL CERTIFICATION		PT SAMPLES				ON-SITE REVIEW 9/19/2006	
		Method	A	NA	ND	Method		Method
Antimony	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Arsenic	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Barium	C	EPA200.7	X			EPA200.7	C	EPA200.7
Beryllium	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Cadmium	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Chromium	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Copper	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Copper	C	SM3111B	X			SM3111B	C	SM3111B
Cyanide	C	SM 4500 CN F	X			SM 4500 CN F	C	SM 4500 CN F
Fluoride	C	EPA300.0	X			EPA300.0	C	EPA300.0
Lead	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Mercury	C	EPA245.1	X			EPA245.1	C	EPA245.1
Nitrate	C	EPA353.2	X			EPA353.2	C	EPA353.2
Nitrate	IC	EPA300.0	X			EPA300.0	IC	EPA300.0
Nitrite	C	EPA353.2	X			EPA353.2	C	EPA353.2
Nitrite	IC	EPA300.0	X			EPA300.0	IC	EPA300.0
Selenium	C	SM 3113 B	X			SM 3113 B	C	SM 3113 B
Thallium	NC	EPA200.9			X	EPA200.9	NC	EPA200.9
Chloride	AP	EPA300.0	X			EPA300.0	AP	EPA300.0
Sulfate	AP	EPA300.0	X			EPA300.0	AP	EPA300.0
TDS	AP	SM2540C	X			SM2540C	AP	SM2540C
Manganese	AP	SM 3111B	X			SM 3111B	AP	SM 3111B
Nickel	AP	SM 3113B	X			SM 3113B	AP	SM 3113B

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Zinc	AP	SM 3111B	X			SM 3111B	AP	SM 3111B
Aluminum	AP	SM 3113B	X			SM 3113B	AP	SM 3113B
Aluminum	IP	EPA 200.7	X			EPA 200.7	IP	EPA 200.7
Iron	AP	SM 3111B	X			SM 3111B	AP	SM 3111B
Silver	AP	SM 3113B	X			SM 3113B	AP	SM 3113B

ORGANIC CHEMICALS:

CONTAMINANT	2009							
	OVERALL CERTIFICATION		PT SAMPLES				ON-SITE REVIEW	
		Method	A	NA	ND	Method		Method
Chloroform	NC							
Bromodichloromethane	NC							
Bromoform	NC							
Chlorodibromomethane	NC							
Total Trihalomethanes	NC							
Vinyl Chloride	NC							
Benzene	NC							
Carbon tetrachloride	NC							
1,2-Dichloroethane	NC							
Trichloroethylene	NC							
para-Dichlorobenzene	NC							
1,1-Dichloroethylene	NC							
1,1,1-Trichloroethane	NC							
cis-1,2-Dichloroethylene	NC							
1,2-Dichloropropane	NC							
Ethylbenzene	NC							
Monochlorobenzene	NC							
o-Dichlorobenzene	NC							

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MICROBIOLOGICAL:

TECHNIQUE	2009							
	OVERALL CERTIFICATION		PT SAMPLES				ON-SITE REVIEW 9/19/2006	
		Method	A	NA	ND	Method		Method
Fermentation	C	SM9221 B&E	X			SM9221 B&E	C	SM9221 B&E
Membrane Filter	C	SM9222B	X			SM9222B	C	SM9222B
Present-Absence (P-A) Coliform Test	NC							
ONPG-MUG Test (Colilert)	C	SM9223	X			SM9223	C	SM92223
Heterotrophic Plate Count (On-Site Only)	C	SM9215B	X			SM9215B	C	SM9215B
E. coli for LT2 Rule	C	SM9223 COLertQT	X			SM9223 COLertQT	C	SM9223 COLertQT

Freedom_0006049_0026

LEAD AND COPPER RULE:

CONTAMINANT	2009							
	OVERALL CERTIFICATION		PT SAMPLES				ON-SITE REVIEW 9/19/2006	
		Method	A	NA	ND	Method		Method
Lead	C	SM3113B	X			SM3113B	C	SM3113B
Copper	C	SM3113B	X			SM3113B	C	SM3113B
Copper	C	SM3111B	X			SM3111B	C	SM3111B
pH	C	EPA150.1	X			EPA150.1	C	EPA150.1
Conductivity	C	SM2510B	X			SM2510B	C	SM2510B
Calcium or Calcium Hardness as $CaCo_3$	C	SM3500 CAD	X			SM3500 CAD	C	SM3500 CAD
Alkalinity	C	SM2320B	X			SM2320B	C	SM2320B
Orthophosphate	IC	EPA300.0	X			EPA300.0	IC	EPA300.0
Silica	NC							
Temperature (On-Site Only)	NC							
Sodium	C	SM3111B	X			SM3111B	C	SM3111B
Turbidity	C	EPA180.1	X			EPA180.1	C	EPA180.1

Freedom_0006049_0027

SECTION IV
ORDER FORMS FOR SAMPLE BOTTLES

Freedom_0006049_0028

West Virginia Department of Health and Human Resources
Environmental Chemistry Laboratory
4710 Chimney Drive, Suite G, Charleston, WV 25302

BOTTLE REQUEST FORM

Telephone: 1-304-965-2694 Ext. 0 Fax: 1-304-965-2696

To request a test please complete the form below and return it to the laboratory either by telephone, FAX or mail.

COLLECTION SOURCE: (CHECK ONE)
PRIVATE HOUSEHOLD:_____ WATER SYSTEM:_____ OTHER:_____

Public Water Supply Identification Number (PWS ID APPLIES):_____

NAME:_____

CONTACT PERSON:_____

MAILING ADDRESS:_____

CITY, STATE:_____ ZIP CODE:_____

PHONE NUMBER:_____

Parameter to be Analyzed	Number of bottles	Parameter to be Analyzed	Number of Bottles	Parameter to be Analyzed	Number of Bottles
Aluminum		Selenium		** Cyanide	
Antimony		Silver		Fluoride	
Arsenic		** SUVA (Raw/Finished)		** Hydrogen Sulfide	
Barium		Sodium		Magnesium	
Beryllium		Thallium		** Nitrate + Nitrite	
Cadmium		** TOC (Raw/Finished)		** Nitrate	
Chromium		Zinc		** Nitrite	
Copper		** Alkalinity		** Ortho-Phosphate	
Iron		Calcium		** pH	
Lead		Calcium Hardness		** Sulfate	
Manganese		Chloride		** Total Dissolved Solids	
Mercury		Chlorine, Free		Total Hardness	
Nickel		Chlorine, Total		** Turbidity	
Potassium		** Conductivity		** Surfactants	

** These analytes require special sample bottles, preservatives, and shipping.

If the water system has been notified for compliance purposes that the continuous monitoring for contaminants in the water supply is needed, the laboratory can add the water system to our automatic bottle shipment schedule.

Do you wish to be added to the automatic bottle shipment list? If so, circle month for mailing.
January February March April May June July August September October November December

Freedom_0006049_0029

FLUORIDE BOTTLE REQUEST FORM

Please Allow 1-2 Weeks for Sample Bottle Delivery

Mail or fax:

West Virginia Department of Health and Human Resources
Office of Laboratory Services
Water Fluoridation Section
4710 Chimney Drive, Suite G
Charleston, West Virginia 25302
Phone: (304) 965-2694 EXT. 2231
Fax: (304) 965-2696

Request for Fluoride Bottles

Water Plant: _____

P.W.S. Number: _____

Address: _____

Phone: _____

Ordered by: _____

Date: _____

Comments _____

Freedom_0006049_0030

West Virginia Department of Health & Human Resources
Bureau For Public Health
OFFICE OF LABORATORY SERVICES
167 – 11th Avenue
South Charleston, WV 25303
Sample Container Department (Patsy Maynard): (304) 558-3530, Ext. 2204
Environmental Microbiology (Tom Ong): (304) 558-3530, Ext. 2710
Fax: (304) 558-2006

BOTTLE REQUISITION FORM
FOR
DRINKING WATER MICROBIOLOGICAL ANALYSIS

P.W.S. I.D. #: _____ (Required for All Public Water Systems)
Name: _____
Shipping Address *(Please provide a United Parcel Service Delivery Address, No P.O. Boxes, when requesting 3 or more Bottles):*
Street Address: _____
City: _____ State: _____ Zip: _____
Mailing Address *(Please provide a mailing address for the U.S. Postal Service when requesting only 1 or 2 Bottles):*
Mailing Address: _____
City: _____ State: _____ Zip: _____
Requested By: _____ Phone: _____
Date of Request: _____

Number of Bottles Requested	Number Currently On-Hand	Number Used per Month/Quarter
		☐per Month ☐per Quarter

Comments
☐ Bottles Needed for Compliance (SDWA) Samples ☐ Bottles needed for GWUDI Study ☐ Bottles Needed for Repeat Samples ☐ Bottles Needed for Special Purpose Samples ☐ Address Change

INSTRUCTIONS

1. Completely fill out the information requested above. The address is where the bottles are to be delivered.
2. If collecting for more than one Public Water System, Please list all P.W.S. I.D. Numbers.
3. Please indicate the Number of Bottles Requested along with the number Currently On-Hand (so that the bottle usage may be accurately tracked) and the Number of Samples Taken per Month/Quarter to meet SDWA Compliance. Sample bottles have a six month shelf life; therefore, the Office of Laboratory Services (O.L.S.) will provide up to a six month supply of bottles.
4. This form may be submitted to the O.L.S. by FAX, by Mail or may be included along with Monthly/Quarterly Samples.
5. The Water Bacteriological Sample Bottles are the property of the O.L.S. and must be returned to the O.L.S. for analysis.

THEY MAY NOT BE SENT TO ANY OTHER COMMERCIAL OR PRIVATE LABORATORY.

DO NOT WRITE BELOW THIS LINE – FOR OFFICE OF LABORATORY SERVICES' USE ONLY					
Last Update	**Number Sent**	**Number Received**	**Number Outstanding**	**Number To Send**	**Date Entered**
Comments:					

BRF Rev. 12-02

Freedom_0006049_0031

SECTION V
SAMPLING INSTRUCTIONS

Freedom_0006049_0032

LEAD/COPPER – First Draw

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

1. The lead /copper kit consist of a quart sample bottle, these instructions, plastic bags, sample information form and a return address label.

2. Use the cold water kitchen tap or bathroom tap for obtaining your sample. If you have a water softener on your kitchen taps, collect your sample from a coldwater tap that is not attached to a water softener. **The sample should be taken after the water has stood motionless in the plumbing system for at least six hours***.**

3. **Do not rinse the bottle prior to sampling. Do not remove the aerator prior to sampling**. Fill the quart sample bottle with the water to be analyzed to within ½ inch of the top. Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

4. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection (kitchen sink, etc.) and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their forms in such a manner that all samples may be correctly identified prior to analysis. Place the sample information form in the zip-loc plastic bag and seal well. Use waterproof ink, non-waterproof ink will bleed if the forms become wet.

5. **Place the filled sample bottles in the large plastic zip-loc bags and seal before placing them in your shipping cartons**. This is to prevent any leakage that may occur during shipment from soaking through the outer container and damaging other mail items.

*****For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

*****For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0033

COMBINED NITRATE+NITRITE

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 28 Days

1. The kit consists of a small plastic sample bottle, these instructions, plastic bags, sample information form and a return address label.

2. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

3. **Do not rinse the bottle prior to sampling** because it contains a small quantity of acid that acts as a sample preservative (required by EPA). Fill the sample bottle with the water to be analyzed to within ½ inch of the top. Do not let bottle overflow. Be sure the cap is tightened to prevent leakage during shipment to the laboratory. **Invert the bottle several times to mix the sample thoroughly with the preservative.**

4. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection, and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their tags in such a manner that all samples may be correctly identified prior to analysis. Place the sample information form in the zip-loc plastic bag and seal well. Use waterproof ink, non-waterproof ink will bleed if the forms become wet.

5. **Place the filled sample bottles in the zip-loc bags and seal before placing them in your shipping cartons**. This is to prevent any leakage that may occur during shipment from soaking through the outer container and damaging other mail items.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0034

NITRATE and/or NITRITE

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 48 Hours

Kits must be shipped "overnight" so that we receive them on Tuesday, Wednesday, or Thursday
State holidays must be taken into account

1. The kit consists of a small plastic sample bottle, foam cooler, **INSUL-ICE™ packets,** temperature control, these instructions, plastic bags, sample information form and a return address label.

2. **Two Zip-loc bags containing INSUL-ICE™ PACKETS must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Do not rinse the bottle prior to sampling**. Fill the sample bottle with the water to be analyzed to within ½ inch of the top. Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

5. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their forms in such a manner that all samples may be correctly identified prior to analysis. Place the sample identification form in the zip-loc plastic bag and seal well. Use waterproof ink, non-waterproof ink will bleed if the forms become wet.

6. Place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler**. This is required to maintain the sample temperature at 6°C**.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0035

INORGANIC TEST

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Sample holding times vary; please mail as soon as possible

1. The kit consists of a small plastic sample bottle, foam cooler, these instructions, plastic bags, sample information form and a return address label. INSUL-ICE™ packets and a temperature control are included when needed.

2. For alkalinity, conductivity, ortho-phosphate, total dissolved solids, turbidity, sulfate, and surfactants; two **Zip-loc bags containing INSUL-ICE™ PACKETS are included with the kit and must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Do not rinse the bottle prior to sampling**. Fill the sample bottle with the water to be analyzed to within ½ inch of the top. Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

5. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their forms in such a manner that all samples may be correctly identified prior to analysis. Place the sample identification form in the zip-loc plastic bag and seal well. Use waterproof ink; non-waterproof ink will bleed if the forms become wet.

6. **Place the filled sample bottles in the zip-loc bags and seal before placing them in your shipping cartons**. This is to prevent any leakage that may occur during shipment from soaking through the outer container and damaging other mail items.

7. For alkalinity, conductivity, ortho-phosphate, total dissolved solids, turbidity, sulfate, and surfactants; place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler**. This is required to maintain the sample temperature at 6°C**. Samples shipped on ice must be mailed for overnight delivery to be received at the laboratory on a Tuesday, Wednesday, or Thursday, excluding state holidays.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0036

HYDROGEN SULFIDE

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 7 Days

Kits must be shipped "overnight" so that we receive them on Tuesday, Wednesday, or Thursday
State holidays must be taken into account

1. The kit consists of a small plastic sample bottle, foam cooler, **INSUL-ICE™ packets,** temperature control, these instructions, plastic bags, sample information form and a return address label.

2. **Two Zip-loc bags containing INSUL-ICE™ PACKETS must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Avoid aeration during sampling**; if the faucet is fitted with an aerator, remove it before sampling **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Do not rinse the bottle prior to sampling** because it contains a small quantity of sample preservative (required by EPA). Fill the brown sample bottle with the water to be analyzed to within ½ inch of the top. Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

5. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their forms in such a manner that all samples may be correctly identified prior to analysis. Place the sample identification form in the zip-loc plastic bag and seal well. Use waterproof ink; non-waterproof ink will bleed if the forms become wet.

6. Place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler**. This is required to maintain the sample temperature at 6°C**.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0037

CYANIDE

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 7 Days

Kits must be shipped "overnight" so that we receive them on Tuesday, Wednesday, or Thursday
State holidays must be taken into account

1. The kit consists of a small plastic sample bottle, foam cooler, INSUL-ICE™ packets, temperature control, a small vial of 8M sodium hydroxide, these instructions, plastic bags, sample information form and a return address label.

2. **Two Zip-loc bags containing INSUL-ICE™ PACKETS must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Do not rinse the bottle prior to sampling** because it contains a small quantity of sample preservative (required by EPA). Fill the brown sample bottle with the water to be analyzed to within ½ inch of the top. Do not let bottle overflow (If it does, request a new kit). **Cap bottle and invert the bottle several times to mix the sample thoroughly with the preservative**.

5. Next, **carefully transfer the liquid contents of the sodium hydroxide vial into the sample bottle**. Be sure the cap is tightened to prevent leakage during shipment to the laboratory. Invert the bottle several times to mix the sample thoroughly with the vial contents.

6. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their forms in such a manner that all samples may be correctly identified prior to analysis. Place the sample identification form in the zip-loc plastic bag and seal well. Use waterproof ink; non-waterproof ink will bleed if the forms become wet.

7. Place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler**. This is required to maintain the sample temperature at 6°C**.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

Freedom_0006049_0038

DISSOLVED ORGANIC CARBON / SUVA

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 48 Hours

Kits must be shipped "overnight" so that we receive them on Tuesday, Wednesday, or Thursday. State holidays must be taken into account

1. The kit consists of a two glass sample bottles, foam cooler, INSUL-ICE™ packets, temperature control, these instructions, plastic bags, sample information form and a return address label.

2. **Two Zip-loc bags containing INSUL-ICE™ PACKETS must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Avoid aeration during sampling**; if the faucet is fitted with an aerator, remove it before sampling. Avoid rubber hoses. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Fill the sample bottles completely full (zero headspace).** Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

5. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their tags in such a manner that all samples may be correctly identified prior to analysis. Place the sample information form in the zip-loc plastic bag and seal well. Use waterproof ink; non-waterproof ink will bleed if the forms become wet.

6. Place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

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TOTAL ORGANIC CARBON

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

Maximum holding time 28 Days

Kits must be shipped "overnight" so that we receive them on Tuesday, Wednesday, or Thursday. State holidays must be taken into account

1. The kit consists of a two glass sample bottles, foam cooler, INSUL-ICE™ packets, temperature control, these instructions, plastic bags, sample information form and a return address label.

2. **Two Zip-loc bags containing INSUL-ICE™ PACKETS must be placed in the freezer 48 hours to FREEZE before sample collection.**

3. **Avoid aeration during sampling**; if the faucet is fitted with an aerator, remove it before sampling. Avoid rubber hoses. **Allow the water to run for 3 to 5 minutes prior to taking the sample.** ***

4. **Do not rinse the bottles prior to sampling**; **they contain a preservative (Phosphoric Acid) that is required by the EPA method.** Fill the sample bottles completely full (zero headspace) **without** overflowing the containers and flushing out the preservative. Be sure the cap is tightened to prevent leakage during shipment to the laboratory.

5. Fill out a sample information form for each system. **Include the system identification number if sampling from a public water system, date and time of sampling, point of collection and your name as the sample collector.** This information is mandatory. If more than one location is being sampled, please match all samples and their tags in such a manner that all samples may be correctly identified prior to analysis. Place the sample information form in the zip-loc plastic bag and seal well. Use waterproof ink; non-waterproof ink will bleed if the forms become wet.

6. Place the filled sample bottle in the zip-loc bag and place the bottle between the frozen INSUL-ICE™ zip-loc bags inside the foam shipping cooler.

***For compliance monitoring** *the samples must be taken from the distribution system: from a customer's faucet. Refer to your district engineer for further sampling instructions.*

***For private well owners** *or general public customers: samples should be taken from the tap most frequently used to obtain water for drinking. If the sample may be used for litigation purposes, the sample(s) must be collected by a district engineer or registered sanitarian accompanied with a chain of custody form.*

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DIRECTIONS FOR BACTERIOLOGICAL SAMPLING

COLLECTING THE SAMPLE

1. Use only sterile sample bottle furnished by State or County Health Departments. These sample bottles have a six month shelf life after which they must be returned to the Office of Laboratory Services for reprocessing.
2. Do not touch the inside of the sample bottle or cap or otherwise contaminate outfit.
3. Do not collect from a storage tank, leaky faucet, aerators, or "purifiers".
4. Allow water to run for 5 minutes to clean service line before sampling.
5. Do not overflow or rinse sample bottle.
6. Fill sample bottle to the shoulder leaving about a 1 inch air space at the top.
7. Replace the sample bottle cap securely.

COMPLETING THE SAMPLE HISTORY - REPORT FORM

1. Complete all of the following information IN INK - make sure that all copies are legible.
2. Provide the following information:
   - A. County of water sample origin.
   - B. Public Supply (PWS) ID Number and name of water supply.
   - C. Who is to be charged for the sample examination?
   - D. Collector's name, title, certification number, organization, and telephone number.
   - E. To whom the final report of examination is to be mailed? (DO NOT WRITE "SAME AS ABOVE" - This information appears in a window envelope.)
   - F. Bottle Number.

3. Complete the following sample collection data:
   - A. Sample Type - Repeat Samples and Replacement Samples must have the complete lab number of the previous sample that they are a Repeat/Replacement for. (Repeat samples are for samples that were previously Total Coliform Positive and must include their source: Original Location, Upstream, Downstream or Other; Replacement Samples are for samples that were previously Not Reported: Unsatisfactory, Laboratory Accident or Invalid.)
   - B. Date and Time of sample collection. COLLECTOR MUST INITIAL THE FORM.
   - C. Give a specific description of the Sampling Point.
   - D. Is the Water Supply Chlorinated? Chlorine Residual.
   - E. pH.
   - F. How the sample is to be transported to the laboratory and the transportation condition.

MAILING - DELIVERY TO LABORATORY

1. Samples must be sent or brought for receipt to the laboratory in time for examination during the following hours (South Charleston Laboratory: 8:00 am to 4:30 pm, Monday thru Friday. Kearneysville Laboratory: 8:00 am to 4:00 pm Monday thru Wednesday and 8:00 am to 12:00 pm, Thursday) and within 30 hours after collection.
2. Check departure schedule of mail or delivery service from your area and plan for collections to be readied for shipment at that time.
3. Make sure postage is affixed to outer mailer.

ALL FIVE COPIES OF THE COMPLETED HISTORY FORM MUST BE ENCLOSED WITH THE SAMPLE.

SAMPLING CONTAINERS ARE THE PROPERTIES OF THE STATE AND THEIR USE IS RESTRICTED ONLY FOR THE COLLECTIONS BY STATE AGENCIES OR THOSE DULY AUTHORIZED BY THE STATE.

MICROBIOLOGICAL ANALYSIS RECORDS ARE DISPOSED OF AFTER 5 YEARS.

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SECTION VI

ENVIRONMENTAL CHEMISTRY RECEIVING AND LOGGING-IN SAMPLES

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ENVIRONMENTAL CHEMISTRY LABORATORY
RECEIVING AND LOGGING-IN SAMPLES

1. RECEIVING SAMPLES

Samples can be received from many sources: U.S. Postal Mail, Courier Service, interdepartmental delivery from Office of Laboratory Services (OLS), and Walk-In Hand Delivered, etc. The sample should be checked to make certain the testing requested is performed in this laboratory. A Sample Information Form should accompany each sample. If the sample is to be used for litigations, a chain of custody must accompany the sample, see Section XI.

Water samples are received from water plant operators, district engineers, county and state sanitarians, contracting firms, business owners and private individuals. Water samples are to be collected only in bottles supplied by the Office of Laboratory Services. This is to ensure the sample is properly preserved to meet SDWA requirements.

~~1.~~2. SAMPLE REJECTION POLICY

Formatted: Bullets and Numbering

2.1. It is the policy of this laboratory to reject any sample submitted for compliance analysis if criteria for sampling are not met. This may include but is not limited to:

- Bottle leaking / insufficient volume
- Improper container/ Improper preservation
- Exceeding required holding time
- No name or address or phone number (unless sent in by sanitarian or district engineer)
- No date or time of collection

SDWA PRESERVATION AND HOLDING TIMES				
Parameter/Method	Preservative	Sample Holding Time	Suggested Sample Size	Type of Container
Metals	HNO_3 pH<2	6 months	1 L	Plastic or Glass
Mercury	HNO_3 pH<2	28 days	100 mL	Plastic or Glass
Cyanide	Cool, 6°C Ascorbic acid NOH pH>12	14 days	1 L	Plastic or Glass
Fluoride	None	1 month	100 mL	Plastic or Glass
Nitrate (Chlorinated)	Cool, 6°C Non Acidified	14 Days	100 mL	Plastic or Glass
Nitrate (Non Chlorinated)	Cool, 6°CNon Acidified	48 hours	100 mL	Plastic or Glass
Nitrite	Cool, 6°C	48 hours	100 mL	Plastic or Glass
(NO2 + NO3)-N	H_2SO_4 pH<2	28 days	100 mL	Plastic or Glass
PRESERVATION AND HOLDING TIMES				
Alkalinity	Cool, 6°C	14 days	1 L	Plastic or Glass
Chloride	None	28 days	1 L	Plastic or Glass
Conductivity	Cool, 6°C	28 days	1 L	Plastic or Glass
Hardness	None	See SOP	1 L	Plastic or Glass
Hydrogen Sulfide	Cool, 6°C, Ascorbic Acid, NaOH pH >12	7 days	1 L	Plastic or Glass
pH	Cool, 6°C	Immediately	1 L	Plastic or Glass
Ortho-Phosphate	Cool, 6°C	48 hours	1 L	Plastic or Glass

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TDS	Cool, 6°C	7 days	1 L	Plastic or Glass
Sulfate	Cool, 6°C	28 days	1 L	Plastic or Glass
Surfactants	Cool, 6°C	48 hours	1 L	Plastic or Glass
SUVA	Cool	24 hours	250 mL	Glass
TOC	Cool, H_3PO_4 pH<2	28 days	250 mL	Glass
Turbidity	Cool, 6°C	48 hours	1 L	Plastic or Glass

2.2. If a phone number is provided, a call will be made to get the required information. If information cannot be corrected by phone, a report is sent stating why sample was unsatisfactory and collector will be asked to resubmit the samples.

2.3. **Special Note 1:** Samples for parameters (other than TOC and SUVA) that are required to be received on ice, will not be rejected if >6 °C if sample is less than 24 hours old from time of sampling and is delivered cooling on ice. If sample is >24 hours old upon receipt and >6 °C, the sample must be rejected.

2.4. **Special Note 2:** Samples for TOC and SUVA must be received on ice, but do not have to meet a temperature criterion upon receipt. If TOC and SUVA samples are received without ice or if all ice has melted, or if SUVA samples have exceeded 48 hour holding time, those samples must then be rejected.

3. **LOGGING IN A SAMPLE:** Sometimes several containers are filled from one source so that different tests can be performed. If all the information is identical (point of collection, date, time, raw or treated source for a specific name), the samples can have the same lab number. When a sample is received, enter the required information into StarLIMS for testing. After login of the sample the printed barcode is attached to the Sample Information Form, sample bottle and the Sample Log-In Book. Initials of the person logging in the sample, and the date/time of receipt, is recorded on the Sample Information Form, along with any Chain-of-Custody requirements. For Chain-of-Custody login procedures see Section I. Details of the StarLIMS software is outline in the StarLIMS SOP.

4. **SAMPLE STORAGE:** Water samples received at the laboratory are kept in their original shipping container during sample accessioning, to maintain any analyte specific preservation requirements. Samples requiring to be kept cool are stored in refrigerators at the appropriate temperature listed in the table under 2.1 above. Each section has a predefined location for processed and unprocessed samples. Sample storage areas are clear of any outside environmental conditions that would affect the integrity of the sample.

5. **SAMPLE DISPOSAL:** Water samples are normally disposed of down the sink. Sample analyte concentrations considered too elevated to poor down the sink will be disposed of through an outside chemical discard company. Disposal of Chain-of-Custody samples are documented on the In-House-Chain of Custody Form located in Section XI, page 77.

6. **SAMPLE RECEIVED WITH PAYMENT:** When a payment is received with sample(s), the check and a receiving slip (Section VI, page 48) is sent to OLS Fiscal Inventory & Management Section. The receiving slip is signed and returned back to Big Chimney. Copy of the check, and receiving slip are stapled together and kept on file by year, under checks forwarded to OLS.

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7. **SAMPLES FOR SANITARY SURVEY/PLANT REVIEW**: These samples are sent from District Engineers from the District Offices as part of an annual plant review. These tests requested may vary depending on the decision of the District Engineer. These samples are generally exempt from fees. If the data is used for compliance monitoring, the Public Water System may be charged the testing fee. Other exemptions from fees are covered in 64CSR51. These exemptions include:

   5.2.a….authorized by the commissioner as part of an epidemiological investigation or charging of the fee would significantly and adversely affect the public…for example, floods.
   5.2.b. Tests on second or additional specimens are required by the commissioner because of the inability to make or complete a test, or because the testing operation or procedure is unsatisfactory for any reason;
   5.2.c. Specimens are determined to be unsatisfactory at the time of submission.

8. **SAMPLE FOR LAB PURE OR DISTILLED WATER:** These samples of De-ionized water are sent from Laboratories Certified for Microbiology testing. The laboratories are not charged for the tests as they are part of the Certification program. The tests include Cadmium, Chromium, Lead, Copper, Nickel, and Zinc.

9. **SAMPLES FROM OFFICE OF ENVIRONMENTAL HEALTH SERVICES (OEHS), ENVIRONMENTAL RESOURCE SPECIALIST (E.R.S.):** These samples are usually for lead testing in private homes. The location of the collection is confidential. The sample has a number given by the collector to identify the sample and is accompanied by an OEHS "Chain of Custody Form".
   9.1. The original Chain of Custody Form is mailed with the lab report to OEHS, to the attention of the collector. A copy of the Chain of Custody Form is attached to the original lab report and filed.
   9.2. OEHS is billed for these tests.

10. **PEDIATRIC FLUORIDE SAMPLES:** These samples are part of the Office of Maternal, Child, and Family Health Pediatric program and received from Health Departments and Dentist. Currently there is no charge for pediatric fluoride testing.

11. **COUNTY SANITARIAN FLUORIDE SAMPLES:** Certain counties collect fluoride samples from public supplies on a regular schedule and submit for testing. These samples are a secondary check of the systems for review by drinking water program regulators (OEHS). There is no charge for these samples. They are usually tested by the Ion Selective Electrode method.

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SAMPLE INFORMATION FORM

Freedom_0006049_0046

BUREAU FOR PUBLIC HEALTH
OFFICE OF LABORATORY SERVICES
4710 Chimney Drive, Suite G, Charleston, WV 25302
Telephone (304) 965-2694 Fax (304) 965-2696

PLACE BARCODE HERE
LAB USE ONLY

▶ *INFORMATION REQUIRED FOR TESTING*

▶ MAIL LABORATORY RESULTS TO

Business Name: _____
Contact Name: _____
Mailing Address: _____
Business Name: _____
City/State: _____
Zip Code: _____
Telephone: _____ Fax: _____

▶ RESPONSIBLE PARTY FOR BILLING (*IF DIFFERENT*)

Business Name: _____
Contact Name: _____
Mailing Address: _____
Business Name: _____
City/State: _____
Zip Code: _____
Telephone: _____ Fax: _____

▶ SAMPLE COLLECTION INFORMATION

Collection Address: _____
Collection Point: _____
Date Collected: _____ Time: _____
Collectors Name: _____
☐ Owner ☐ Operator
☐ District Engineer..... District: _____
☐ Sanitarian..... County: _____
Lead/Copper Only: Water was last used Time: _____
Date: _____

▶ PURPOSE OF SAMPLE

☐ Regulatory Compliance
☐ Sanitary Survey ☐ Plant Review ☐ Special Purpose
☐ Lead Assessment ☐ Customer Request ☐ Home Loan
☐ Complaint ☐ Other:

▶ SOURCE OF SAMPLE

☐ Well ☐ Spring ☐ Purchased
☐ River/Creek ☐ Impoundment

▶ TYPE OF WATER

☐ Raw ☐ Treated ☐ Treated/Chlorinated
☐ Lab Pure ☐ Other:

▶ PUBLICE WATER SYSTEM IDENTIFICATION NUMBER

▶ PARAMETERS REQUESTED FOR TESTING

Please call the laboratory for additional tests, a separate bottle may be required.

METALS	NON-METALS
☐ Aluminum	☐ *Alkalinity, Total
☐ Antimony	☐ Calcium
☐ Arsenic	☐ Calcium Hardness
☐ Barium	☐ Chloride
☐ Beryllium	☐ Chlorine (Free/Total)
☐ Cadmium	☐ *Conductivity
☐ Chromium	☐ *Cyanide, Free
☐ Copper	☐ Fluoride
☐ Iron	☐ *Hydrogen Sulfide
☐ Lead	☐ *Combined Nitrate + Nitrite
☐ Magnesium	☐ *Nitrate
☐ Manganese	☐ *Nitrite
☐ Mercury	☐ *Orthophosphate
☐ Nickel	☐ pH
☐ Selenium	☐ *Sulfate
☐ Silver	☐ *Surfactants
☐ Sodium	☐ *Total Dissolved Solids
☐ Thallium	☐ Total Hardness
☐ Zinc	☐ *Turbidity
ORGAINCS	
☐ *Total Organic Carbon	
☐ *SUVA	

NOTE: * These analytes require special sample bottles and preservatives
Metals and non-metals are to be collected in separate bottles

COMMENTS:

LABORATORY USE ONLY

RECEVIED BY

DATE/TIME RECEIVED

LABORATORY USE ONLY

PERSON PREPARING KIT/DATE:	IDENTIFY SAMPLE PRESERVATIVES WHEN SHIPPED			APPROVED CONTAINER:	☐ YES	☐ NO
	$NO_3 + NO_2$	☐ H_2SO_4		REQUIRED VOLUME:	☐ YES	☐ NO
	CN	☐ NaOH	☐ $C_6H_8O_6$	CHAIN OF CUSTODY FORM:	☐ YES	☐ NO
	TOC	☐ H_3PO_4		TEMPERATURE WHEN RECEVIED:		
METHOD OF SHIPPING UPON RECEIPT:	☐ US MAIL	☐ COURIER	☐ HAND DELIVERED	☐ OTHER		

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FLUORIDATION PROGRAM SAMPLE FORM

Water Fluoridation Report

Public Water Supply Information

Supply: County:

P.W.S. Number: Water Plant Phone Number:

Sampling Point:

Date Collected:

Collected by: Title:

Water System Results (PPM):

Check Method: ☐ Specific Ion Method ☐ SPADNS

Mail Report to: (*address must be legible on all copies of report form for return)*

LABORATORY RESULTS

Fluoride Level (PPM):

Date Analyzed:

Analyst:

Comments:

☐ Exceeds maximum recommended level of 1.3.

☐ Below minimum recommended level of 0.8.

☐ Satisfactory

Optimum level of fluoridation is 1.0.

West Virginia Department of Health and Human Resources
Office of Laboratory Services – Environmental Chemistry Laboratory – Water Fluoridation Section
4710 Chimney Drive, Suite G, Charleston, WV 25302
Phone: (304) 965-2694 Fax: (304) 965-2696

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PEDIATRIC FLUORIDE SAMPLE FORM

Fluoride Test Report (Supplement Program)

Ages:			
Names of Children			Parent's Name: (or guardian)
Address:			County:
City: Zip:			Phone:
This water is from: ☐ WELL / CISTERN ☐ OTHER			Test Result ☐☐.☐☐ ppm
Mail Report To:			
Address:			County:
City: Zip:			Phone:
Date Received	Lab No.	Analyst	Environmental Health Services Lab 1800 Washington Street Charleston, W. Va. 25305

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PAYMENT RECEIVED FOR TESTING

W.V.D.H.H.R. OFFICE OF LABORATORY SERVICES
ENVIRONMENTAL CHEMISTRY LABORATORY SECTION
4710 CHIMNEY DRIVE, SUITE G, CHARLESTON, WV 25302
PAYMENT RECEIVED AND FORWARDED FOR REQUESTED TESTING

BUSINESS NAME:		CLIENT LIST #/PWSID # :	
(Billing/Contact) NAME:		SAMPLE # :	
ADDRESS:		TELEPHONE # :	
		FAX # :	

A. TEST $50.00	B. TEST $40.00	C. TEST $25.00
☐ SUVA (raw & finish)	☐ Total Organic Carbons (raw & finish)	☐ Mercury
x $50.00 = $0.00	X $40.00 = $0.00	X $25.00 = $0.00

D. TESTS $15.00		E. TESTS $14.00	
☐ Calcium	☐ Chloride	☐ Aluminum	☐ Selenium
☐ Copper	☐ Fluoride	☐ Antimony	☐ Silver
☐ Hydrogen sulfide	☐ Iron	☐ Arsenic	☐ Thallium
☐ Magnesium	☐ Manganese	☐ Beryllium	☐ Tin
☐ Nitrate	☐ Nitrate + Nitrite	☐ Cadmium	
☐ Nitrite	☐ Ortho-Phosphate	☐ Chromium	
☐ Silica	☐ Sodium	☐ Lead	
☐ Sulfate	☐ Zinc	☐ Nickel	
x $15.00 = $0.00		x $14.00 = $0.00	

F. TESTS $13.00	G. TESTS $12.00
☐ Total Dissolved Solids	☐ Barium
x $13.00 = $0.00	☐ Chlorine, Free
	☐ Chlorine, Total
H. TESTS $10.00	☐ Turbidity
☐ Alkalinity ☐ Conductivity	☐ Surfactants
☐ Calcium Hardness ☐ Total Hardness	x $12.00 = $0.00
x $10.00 = $0.00	

I. TESTS $9.00	*CHECK OR MONEY ORDER # :.....*
☐ Cyanide	*DATE ON CHECK/MONEY ORDER:*
☐ pH	*DATE RECEIVED: .....*
☐ Fluoride (ISE)	*DATE FORWARDEDTO OLS: .....*
x $9.00 = $0.00	*TOTAL AMOUNT OF TEST REQUESTED: .....* 0

TOTAL AMOUNT OF PAYMENT RECEIVED:	$0.00	TO BE FILLED OUT BY O.L.S. - FISCAL
TOTAL AMOUNT DUE FOR ANALYTICIAL TESTING:	$0.00	AND RETURNED TO ENV. CHEMISTRY LAB
BALANCE DUE FOR TESTING:	-----	DATE RECEIVED:
CREDIT TO ACCOUNT:	-----	PAYMENT RECEIVED BY:
FORWARDED BY: *(SIGNATURE)*		*(Signature)*

LOCATION: \\Olsbc01\shared\Bigchim\BLANK FORMS\SAMPLE PAYMENT FORMS/ 2009 SAMPLE PAYMENT RECEIVING FORM

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PAYMENT RECEIVED FOR CERTIFICATION

WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF LABORATORY SERVICES
ENVIRONMENTAL CHEMISTRY LABORATORY SECTION
4710 CHIMNEY DRIVE, SUITE G, CHARLESTON, WV 25302
CERTIFICATION FEES RECEIVED AND FORWARDED

☐ ***NEW LAB CERTIFICATION*** ☐ ***CERTIFICATION RENEWAL***

LABORATORY NAME :	DIRECTOR'S NAME:
CONTACT NAME :	OUR CLIENT LIST # :
MAILING ADDRESS :	TELEPHONE # :
	FAX # :

	TO ADD OR RENEW PARAMETER GROUP ***(CHECK BLACK BOX & WRITE AMOUNT IN RED BOX)***	***Each $800.00***
CHECK OR MONEY ORDER # :	☐ CHEMISTRY (INORGANIC)	
DATE ON CHECK :	☐ CHEMISTRY (PEST/HERB/SOC)	
DATE PAYMENT RECEIVED:	☐ CHEMISTRY (THM/VOC/HAA5)	
DATE FORWARDEDTO OLS:	☐ MICROBIOLOGY	

TOTAL AMOUNT OF PAYMENT RECEIVED:		TO BE FILLED OUT BY O.L.S. - FISCAL
AMOUNT DUE FOR CERTIFICATION FEES:	$0.00	AND RETURNED TO ENV. CHEMISTRY LAB
BALANCE DUE FOR CERTIFICATON FEES:	.....	*DATE RECEIVED:*
CREDIT TO ACCOUNT:	.....	*PAYMENT RECEIVED BY:*
FORWARDED FROM: *(SIGNATURE)*		*(SIGNATURE)*
CC. TO O.L.S./MICRO: TOM ONG	YES ☐	NO ☐

COPY CHECK HERE:

Location: Q:\Data01\shared\Bigelow\BLANK FORMS\SAMPLE PAYMENT FORMS\2009 CERT. FEE RECEIVING FORM

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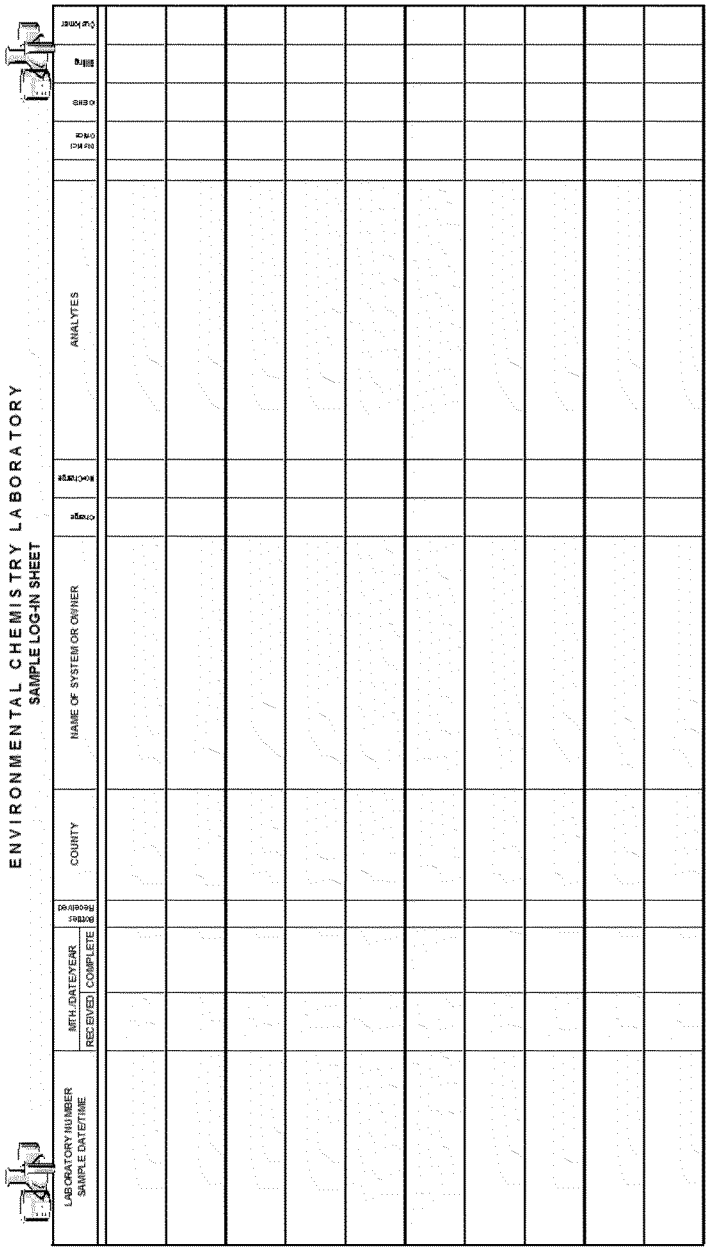
SAMPLE SHEET FOR LOG-IN BOOK



ENVIRONMENTAL CHEMISTRY LABORATORY
SAMPLE LOG-IN SHEET

LABORATORY NUMBER / SAMPLE DATE/TIME	MTH./DATE/YEAR RECEIVED	MTH./DATE/YEAR COMPLETE	Received Bottles	COUNTY	NAME OF SYSTEM OR OWNER	Orange	Blue/Green	ANALYTES							

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SECTION VII

ENVIRONMENTAL MICROBIOLOGY WATER SAMPLE COLLECTION AND HANDLING

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ENVIRONMENTAL MICROBIOLOGY WATER SAMPLE COLLECTION & HANDLING

1. **Introduction**

Sample Handling is a critical aspect of the examination process. Without maintaining sample integrity, test results are meaningless. This section deals with all aspects of sample handling for the Water Program. Discussions will be included on Sampler Training, Sample Scheduling, Sample Collection, Transportation, Sample Accession, Storage and Disposal.

2. **Training for Samplers**

2.1. Water samples are received from water plant operators, district engineers, county and state sanitarians, contracting firms, business owners and private individuals. To submit samples for Compliance (compliance with the Safe Drinking Water Act), and individual must have at minimum a Class 1-D Operators License. Training is provided in the following manner:

- Water Plant Operators - Receive training at the Water Plant Operators Course held at the Environmental Training Center in Ripley, WV.
- District Engineers - Receive on-the-job training.
- County and State Sanitarians - Receive training at the Sanitarian Training Course held at the Office of Environmental Health Services. They also receive on-the-job training.
- Business Owners - People that own establishments that have their own wells that serve the public must receive training from the Office of Environmental Health Services, Environmental Engineering Division.
- Contracting Firms and Private Individuals - Receive no formal training but are provided detailed instructions on the back of the Water Bacteriological Report Form.

3. **Sample Scheduling:** Water samples for compliance purposes are submitted based on schedule setup by the Office of Environmental Health Services - Environmental Engineering Division. Other types of water samples are not scheduled. Clients are discouraged from submitting samples on Weekends.

4. **Sample Collection**

4.1. Water samples are to be collected only in vessels supplied by the Office of Laboratory Services. There are two types of collection vessels used - a 4 oz. nalgene bottle that is laboratory processed and reused and clear, disposable vessels provided by IDEXX. Only by special permission of the section supervisor may another type of bottle be used.

4.2. Collection vessels are mailed out to clients of the Office of Laboratory Services by the Container Section. Collection vessels may also be picked up in person by stopping by the laboratory.

4.3. Sample collection must be performed as described in Attachment #2.

4.4. After sample collection, the Water Bacteriological Report Form (EM-1) Attachment #3 is to be completed as described in Attachment #4.

5. **Sample Accession**

5.1. 90% of samples are picked up from the South Charleston Post Office by maintenance personnel and delivered to the General Reporting Office where the samples are sorted

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according to the appropriate laboratory sections. Samples that are shipped to the laboratory by other couriers (UPS, FedEx or DHL) are delivered to the Fiscal and Inventory Management Section and then delivered to Environmental Microbiology. Samples are also brought in to the laboratory by clients and left at the front desk throughout the day. The receptionist notifies the section each time samples are left at the front desk.

5.2. Upon receipt by the Environmental Microbiology Section the samples are sorted according to Test Method and Sample Codes. See Attachment #10 for a list of Test Methods and Sample Codes and Attachment #11 Test Method Chart. Sample vessels are set on top of the water bacteriological report form (they must be kept together). A three digit number sticker is placed on top of the sample vessel (the last three digits of the 5 digit laboratory number) and the water bacteriological report form is stamped with the laboratory number and date received. The water bacteriological report from is then marked with the test method, time received, initials of analysts receiving samples, analysis date and time and initials of analysts performing the analysis.

5.3. Water bacteriological report forms are then entered into the computer using Microsoft Access. The following fields are entered:

- Lab Number
- Test Method and Sample Code
- County of Origin
- Date of Collection, Receipt and Analysis
- Supply
- Mailing Address
- Collector
- Public Water Supply ID Number
- Sampling Point
- Compliance, Special Purpose or Repeat

5.4. The data base is used for printing the daily worksheets, locating samples for phone inquiries and compiling monthly reports.

5.5. Water samples will not be analyzed for any of the following reasons:

- Exceeded Time (30 hours for compliance with the SDWA and samples requiring counts, 48 hours for all others)
- Sample Contains < 100 mL
- Insufficient Information (No date and time of collection or no phone number)
- Sample contains residual chlorine
- Insufficient air space to facilitate mixing
- Unauthorized Collector
- For any samples not analyzed, a replacement sample is requested.

6. **Sample Storage**: Water samples are analyzed immediately upon sample accession unless they are received at 4:30 pm. Samples received at 4:30 pm are stored in a wire basket in the sliding door refrigerator located in the Milk Room at 0.0 - 4.4°C (as long as the holding times will not be exceeded); unless the holding time will expire by the next morning or results are needed the next day as in the case of a "Boiled Water Advisory", then those sample will be analyzed up until 4:30 pm using Colilert 18. All samples analyzed after 1:30 pm are by Colilert 18.

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7. Sample Disposal

7.1. Excess water from water samples (sample remaining after use of 100 mL for analysis) is collected in wax buckets and disposed of down the sink unless sewage is suspected in which case the remaining sample is left in the vessel and is taken to the Media/Glassware Section for autoclaving .

7.2. All multi tube fermentation tests (100 mL, 10 tube and dilutions), are taken to the Media/Glassware Section for autoclaving and reprocessing.

7.3. Negative Colilert 100 mL samples are poured down the sink and the vessels disposed of in the hard trash.

7.4. Positive Colilert 100 mL samples have > 2mL of bleach added to them, mixed, and left overnight, then poured down the sink and the vessels disposed of in the hard trash.

7.5. Quanti Trays are placed into autoclave bags and taken to the back autoclave for disposal.

7.6. HPC plates are placed into autoclave bags and taken to the back autoclave for disposal.

7.7. Nalgene sample vessels are taken to the Media/Glassware section for washing, autoclaving and reprocessing.

Freedom_0006049_0056

MICROBIOLOGY SAMPLE FORM

EM-1
REV 5/03

WATER BACTERIOLOGICAL REPORT **COUNTY OF ORIGIN:**

NAME OF WATER SUPPLY

P.W.S. I.D. #

NAME:

ADDRESS:

CODE

CITY/STATE/ZIP:

COLLECTOR: TITLE: CERTIFICATION #:

COLLECTORS ORGANIZATION: PHONE:

SAMPLE TYPE:

❑ COMPLIANCE (SDWA): ❑ CWS ❑ NTNCWS ❑ TNCWS
❑ RAW *(DILUTIONS REQUIRED)*: ❑ SURFACE ❑ GROUND
❑ SPECIAL PURPOSE
❑ REPLACEMENT FOR LAB:# →
❑ REPEAT FOR LAB#: →
❑ REPEAT ORIGINAL ❑ REPEAT DOWNSTREAM
❑ REPEAT UPSTREAM ❑ REPEAT OTHER:

❑ INDIVIDUAL HOUSEHOLD:
❑ WELL
❑ CISTERN
❑ SPRING
❑ IS SUPPLY PROTECTED?
❑ YES
❑ NO

❑ POOL
❑ BEACH
❑ BOTTLED WATER/ICE
❑ DAIRY FARM
❑ DAIRY PLANT
❑ OTHER:

REPORT TO BE MAILED TO:

NAME:

ADDRESS:

CITY/STATE/ZIP:

BOTTLE NUMBER:

SAMPLE COLLECTION: ❑ AM COLLECTOR'S
DATE: / / TIME: : ❑ PM INITIALS:

CHLORINATED?
❑ YES ❑ NO RESIDUAL: ❑ TOTAL ❑ FREE

pH

SAMPLING POINT

SAMPLE TRANSPORTATION: ❑ US MAIL ❑ UPS ❑ FEDEX
❑ AIRBORNE ❑ OTHER:
❑ HAND DELIVERED: ❑ BY COLLECTOR ❑ OTHER:
TRANSPORTATION CONDITION:
❑ PROTECTED FROM SUNLIGHT ❑ REFRIGERATED <10°C (50°F)

"DO NOT WRITE BELOW THIS LINE"

"DO NOT WRITE BELOW THIS LINE"

LAB NO. DATE REC'D

METHOD OF ANALYSIS:
❑ MUTLI TUBE FERMENTATION SM 9221 B/E
❑ CHROMOGENIC/FLUOROGENIC SM 9223 B
❑ MEMBRANE FILTRATION SM 9222 B / SM 9221 E
❑ HETERTROPHIC PLATE COUNT SM 9215 B

SAMPLE ANALYSIS:
DATE:
TIME: ❑ AM ❑ PM
ANALYSTS:
TEMP: °C

TIME REC'D: ❑ AM ❑ PM
REC'D BY: TEMP °C

❑ ***SAMPLES NOT EXAMINED DUE TO:**
❑ EXCEEDED TIME ❑ INSUFF. VOLUME
❑ INSUFF. INFO. ❑ UNAUTH. COLLECTOR
❑ CONTAINED RESIDUAL CHLORINE
❑ INSUFF. AIR SPACE TO FACILITATE MIXING

LABORATORY RESULTS:

TOTAL COLIFORMS: ❑ PRESENT ❑ ABSENT PER 100mL
FECAL COLIFORMS: ❑ PRESENT ❑ ABSENT PER 100mL
E. COLI: ❑ PRESENT ❑ ABSENT PER 100mL
HETEROTROPHIC PLATE COUNT: CFU/mL
❑ *INVALID DUE TO:
❑ TURBID ❑ COLOR INDETERMINATE ❑ TNTC ❑ CONFLUENT GROWTH ❑ PARTICULATE MATTER
❑ *LABORATORY ACCIDENT ❑ ***SEND REPLACEMENT SAMPLE**

REMARKS: ❑ REPORTED/❑ FAXED TO:

DATE REPORTED:

DIRECTOR:

❑ NOT VALID FOR SDWA COMPLIANCE REPORTING

87863
87873

WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH - OFFICE OF LABORATORY SERVICES
SO. CHARLESTON, WV 25303
KEARNEYSVILLE, WV 25430

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SECTION VIII

ENVIRONMENTAL CHEMISTRY DATA REPORTING PROCEDURE

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ENVIRONMENTAL CHEMISTRY DATA REPORT PROCEDURE

1. **PROGRAM MANAGER REVIEW:** Upon completion of testing, the analysts will enter results into StarLIMS. The sample will appear in the StarLIMS APPROVAL folder when all tests are completed for the Program Manager to review and release. See StarLIMS SOP for details. All raw data for compliance monitoring results that exceed the MCL must be cross-checked by a second analyst for calculation errors and initialed **before** entering the results into StarLIMS.

2. **MAILING LAB REPORTS:** Lab reports (Section VIII, page 58) are generated by StarLIMS after testing is completed and the Program Manager has reviewed and released the data. See StarLIMS SOP for further instructions. Information concerning where lab reports are mailed is recorded in the Sample Log-In-Book with the date. The approval on a lab report is the date recorded as the completion date of sample.
   2.1. Sample Results for samples collected by District Engineers are forwarded to the submitting collector.
   2.2. Sample Results for samples collected by Sanitarians are forwarded to the submitting collector and customer.
   2.3. Sample Results for **Regulatory Compliance Samples** are:
      - Mailed to customers with an attached notice that copies will be sent to Regulatory Compliance Agencies.
      - Faxed to OEHS - Data Management 304-558-0139
      - Results above the regulated MCL are FAXED within 24 hours to: OEHS Data Management
      - Mailed to the District Office for area in which sample was collected.

   2.4. Samples for the **Lead Assessment Program** in drinking water from OEHS Environmental Resources Specialist (ERS) are mailed to:
      - WV Bureau for Public Health
        (Name of collector), E.R.S.
        One Davis Square Suite 200
        Charleston, WV 25301-1798

   2.5. All **other** sample results are mailed to:
      - The customer

3. **FILING AND STORING REPORTS**
   3.1. Before filing, information from completed copies of lab reports are used to verify monthly reports generated by StarLims.
   3.2. Staple the Sample Information Form to a copy of completed lab report and Chain-of Custody Form(s), when applicable and file in office, by year and county.
   3.3. Sample report retention is defined in Section XIII, paragraph 4., page 87.

4. **BILLING:** Starlims generates a tailored billing report that is forwarded to the OLS Fiscal Unit by the end of each month. These billing reports are stored electronically on the server for future reference in Adobe Acrobat format.

5. **MONTHLY ADMINISTRATION REPORTS:** At the end of each month an administration report must be submitted. This report outlines the section's workload, repeated analyses, unsatisfactory samples, quality controls, and proficiency testing samples.

Freedom_0006049_0059

CHEMISTRY REPORT FORM

WVDHHR/BPH - Office of Laboratory Services
Environmental Chemistry Laboratory
4710 Chimney Drive Suite G
Charleston, WV 25302
Ph. 304-965-2694

Laboratory Analytical Report

Folder #:
Date Received:
Purpose: Regulatory Compliance

Submitter:
PWSID:

Sample #:
Collected By:
Collector Title:
Collection Point:

Source of Water:
Type of Water:

Date Collected:
Time Collected:

Test	Results	Test Method	MCL (SMCL)	MRL	Date Tested	Tested By

Comments:

Approved By:

Date Reported:

MCL = Maximum Contaminant Level SMCL = Secondary Maximum Contaminant Level MRL = Minimum Reporting Level
This document contains confidential health information that is privileged, confidential and exempt from disclosure under law. If you have received this information in error, please call (304)-965-2694 and arrange for return or destruction.

Freedom_0006049_0060

PEDIATRIC FLUORIDE SAMPLE REPORTING FORM

Fluoride Test Report (Supplement Program)

Ages:			
Names of Children			Parent's Name: (or guardian)
Address:			County:
City: Zip:			Phone:

This water is from:

☐ WELL / CISTERN ☐ OTHER

Test Result ☐☐.☐☐ ppm

Mail Report To:

Address:			County:
City: Zip:			Phone:
Date Received	Lab No.	Analyst	Environmental Health Services Lab 1800 Washington Street Charleston, W. Va. 25305

Freedom_0006049_0061

COVER LETTER FOR SDWA REPORTS

West Virginia Department of Health and Human Resources

Office of Laboratory Services

ENVIRONMENTAL CHEMISTRY LABORATORY

4710 Chimney Drive, Suite G, Charleston,
West Virginia 25302
Telephone No. 304-965-2694 FAX No. 304-965-2696

For your convenience:

Copies of your enclosed laboratory report(s) have been forwarded to the following agencies:

1. **Regulatory Development & Compliance** West Virginia Bureau for Public Health
   Office of Environmental Health Services
   Capital and Washington Street
   1 Davis Square Suite 200
   Charleston, West Virginia 25301-1798

2. **Local District Office** Located: *(Mailed to the office of district in which sample is collected)*

   Beckley District Office
   Saint Albans District Office
   Kearneysville District Office
   Wheeling District Office
   Philippi District Office

Freedom_0006049_0062

ADMINISTRATION MONTHLY SAMPLE REPORT

WVDHHR/BPH - Office of Laboratory Services

167 11th Avenue, South Charleston, WV 25303
Phone: (304) 558-3530 Fax: (304) 558-6210
Andrea M. Labik, Sc.D - Laboratory Director
Environmental Chemistry Section

From: 03/03/2008 **To:** 04/16/2008

EXAMPLE

Sample Type	# Samples Received	# Samples Approved	# Unsats	# Tests	# Retest	# QC	# PT
TOTAL:	53	414	21	538	2	453	43

 # Samples Received, # Retest, # QCand #PT will be manually entered.

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SECTION IX

ENVIRONMENTAL MICROBIOLOGY DATA HANDLING AND REPORTING

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DATA HANDLING AND REPORTING FOR MICROBIOLOGY

Data produced by the Environmental Microbiology Laboratory Section is electronically recorded into a computer program called Safe Drinking Water Information System for West Virginia (SDWIS/WV) Safe Water Electronic Entry Tool (SWEET) PC which West Virginia purchased from Global Environmental Consulting Inc. (GEC). This computer information system allows data to be transmitted directly to the Office of Environmental Health Services (OEHS) Drinking Water Program. The GEC SWEET PC program is a tool created to assist the drinking water regulatory agency in managing data collected from water samples. This system improves data handling and validation of results. This data handling system was installed in 2003 and is administered by OEHS (EDD).

Freedom_0006049_0065

MICROBIOLOGY SAMPLE FORM

EM-1
REV 5/03

WATER BACTERIOLOGICAL REPORT **COUNTY OF ORIGIN:**

NAME OF WATER SUPPLY

P.W.S. I.D. #

NAME:

ADDRESS:

CODE

CITY/STATE/ZIP:

COLLECTOR: TITLE: CERTIFICATION #:

COLLECTORS ORGANIZATION: PHONE:

SAMPLE TYPE:

- ❑ COMPLIANCE (SDWA): ❑ CWS ❑ NTNCWS ❑ TNCWS
- ❑ RAW *(DILUTIONS REQUIRED)*: ❑ SURFACE ❑ GROUND
- ❑ SPECIAL PURPOSE
- ❑ REPLACEMENT FOR LAB:#
- ❑ REPEAT FOR LAB#:
  - ❑ REPEAT ORIGINAL ❑ REPEAT DOWNSTREAM
  - ❑ REPEAT UPSTREAM ❑ REPEAT OTHER:
- ❑ INDIVIDUAL HOUSEHOLD:
  - ❑ WELL
  - ❑ CISTERN
  - ❑ SPRING
- ❑ IS SUPPLY PROTECTED?
  - ❑ YES
  - ❑ NO
- ❑ POOL
- ❑ BEACH
- ❑ BOTTLED WATER/ICE
- ❑ DAIRY FARM
- ❑ DAIRY PLANT
- ❑ OTHER:

REPORT TO BE MAILED TO:

NAME:

ADDRESS:

CITY/STATE/ZIP:

BOTTLE NUMBER:

SAMPLE COLLECTION: ❑ AM COLLECTOR'S

DATE: / / TIME: : ❑ PM INITIALS:

CHLORINATED? ❑ YES ❑ NO RESIDUAL: ❑ TOTAL ❑ FREE

pH

SAMPLING POINT

SAMPLE TRANSPORTATION: ❑ US MAIL ❑ UPS ❑ FEDEX ❑ AIRBORNE ❑ OTHER:

❑ HAND DELIVERED: ❑ BY COLLECTOR ❑ OTHER:

TRANSPORTATION CONDITION:

❑ PROTECTED FROM SUNLIGHT ❑ REFRIGERATED <10°C (50°F)

"DO NOT WRITE BELOW THIS LINE"

"DO NOT WRITE BELOW THIS LINE"

LAB NO. DATE REC'D

METHOD OF ANALYSIS:

- ❑ MUTLI TUBE FERMENTATION SM 9221 B/E
- ❑ CHROMOGENIC/FLUOROGENIC SM 9223 B
- ❑ MEMBRANE FILTRATION SM 9222 B / SM 9221 E
- ❑ HETERTROPHIC PLATE COUNT SM 9215 B

SAMPLE ANALYSIS:

DATE:

TIME: ❑ AM ❑ PM

ANALYSTS:

TEMP: °C

TIME REC'D: ❑ AM ❑ PM

REC'D BY: TEMP °C

❑ *SAMPLES NOT EXAMINED DUE TO:

- ❑ EXCEEDED TIME ❑ INSUFF. VOLUME
- ❑ INSUFF. INFO. ❑ UNAUTH. COLLECTOR
- ❑ CONTAINED RESIDUAL CHLORINE
- ❑ INSUFF. AIR SPACE TO FACILITATE MIXING

LABORATORY RESULTS:

TOTAL COLIFORMS: ❑ PRESENT ❑ ABSENT PER 100mL

FECAL COLIFORMS: ❑ PRESENT ❑ ABSENT PER 100mL

E. COLI: ❑ PRESENT ❑ ABSENT PER 100mL

HETEROTROPHIC PLATE COUNT: CFU/mL

❑ *INVALID DUE TO:

❑ TURBID ❑ COLOR INDETERMINATE ❑ TNTC ❑ CONFLUENT GROWTH ❑ PARTICULATE MATTER

❑ *LABORATORY ACCIDENT ❑ *SEND REPLACEMENT SAMPLE

REMARKS: ❑ REPORTED/❑ FAXED TO:

❑ NOT VALID FOR SDWA COMPLIANCE REPORTING

DATE REPORTED:

DIRECTOR:

87863
87873

WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH - OFFICE OF LABORATORY SERVICES

SO. CHARLESTON, WV 25303
KEARNEYSVILLE, WV 25430

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ADMINISTRATION MONTHLY SAMPLE REPORT

WEST VIRGINIA DEPARTMENT OF HEALTH & HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH
OFFICE OF LABORATORY SERVICES
ENVIRONMENTAL MICROBIOLOGY
MONTH YEAR

ANALYST	TITLE	WORK AREA	DATE EMPLOYEED/PROMOTED	COMMENTS

TECHNICAL ANALYST CERTIFICATIONS F = Fully Certified C = Conditionally Certified P = Provisionally Certified N = Not Certified																
	SM9221B	SM9223B	SM9222B	SM9215B	PAC	CC/HSCC	Delvo	Charm SL	SNAP	Parallux	DMSCC	ESCC	ALP	PMC	SPC	Coliform

WATER SAMPLES		MILK SAMPLES & CONTAINERS	
Number of Samples	Number of Exams	Number of Samples	Number of Exams
Percent Change From Previous Month		Percent Change From Previous Month	
Percent Change From Previous Year		Percent Change From Previous Year	

LABORATORY CERTIFICATION PROGRAM				
Date	Laboratory	Evaluated By	Previous Evaluation Date	Comments

PROFICIENCY TESTING				
Date	Supplying Agency	Analytes	Test Methods/Codes	Analysts

EVENTS Type: TP = Training Presentations Given C = Courses Attended SC = Seminars/Conferences Attended				
Date	Event	Type	Location	Analyst

ADDITIONAL COMMENTS

Freedom_0006049_0067

WATER MONTHLY REPORT
PERIOD:

Supervisor:

Total Samples
Total Exams

		1	2	3	4	5	6	7	8	9
		MF	MTF	Colilert	MF	MTF	MTF	Colilert	Colilert	HPC
		100 mL	100 mL	100 mL	Dilutions	10 Tube	Dilutions	51 Well	97Well	1.0/0.1 mL
Public Water	**A**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Private Wells	**B**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Home Loans	**C**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Pools/Hot Tubs	**D**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Beaches	**E**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	E. coli +									
	E. coli									

Freedom_0006049_0068

	>235									
	Invalid									
	UNSAT									
	LA									
Btl Water/Ice	**F**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Dairy Farm Water	**G**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Dairy Plant Water	**H**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Raw Surface Water	**I**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	>20,000									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Raw Ground Water	**J**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Coliform >100									
	E. coli +									
	E. coli >20									

Freedom_0006049_0069

	Invalid									
	UNSAT									
	LA									
Raw Bottled Water	**K**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Coliform >100									
	E. coli +									
	E. coli >20									
	Invalid									
	UNSAT									
	LA									
Sewage Suspects	**L**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Disasters-Public	**M**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
Disasters-Private	**N**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
PT - MTF-100 mL	**O**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									

Freedom_0006049_0070

PT - Collilert-100 mL	P									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									
PT - MF-100mL	**Q**									
	Total Rec'd									
	Analyzed									
	Coliform +									
	Fecal/E. coli +									
	Invalid									
	UNSAT									
	LA									

Freedom_0006049_0071

SECTION X
INSTRUMENT AND EQUIPMENT CALIBRATIONS

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Instrument and Equipment Calibrations

1. INTRODUCTION

All instrumentation and equipment used within the laboratory environment must be calibrated to meet an established set of predefined acceptance criteria. To calibrate something within a laboratory setting however, will depend on the instrument, equipment and methodologies involved.

Instrument calibration may involve an initial startup performance check prior to the analysis of an analyte calibration curve to verify the system is working properly. These initial startup performance checks are usually defined within the methodology. Some analyte calibration curve techniques are so time consuming for some methodologies that it is impractical on a daily basis and only an Initial Calibration Verification standard is used to determine if the system is in working order.

To calibrate equipment usually means to verify it is within manufacturer operational specifications. For example this could be an annual check to verify a pipette is dispensing the appropriate volume, within manufacturer error limits.

2. REQUIRMENTS

2.1. Detailed, stepwise calibration/performance procedures will be documented for all equipment and instrumentation requiring calibration. Each procedure will include a description of the:

- Equipment/instrument
- Reference standards used
- Calibration technique
- Acceptable performance tolerances
- Frequency of calibration

3. DOCUMENTATION

3.1. Documentation will be maintained to record the dates, calibration, and values in order to assure the consistent practice of periodic calibrations

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SECTION XI
CHAIN OF CUSTODY

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CHAIN OF CUSTODY

Sample results that may be subject to litigation should be handled under a ***chain-of-custody*** documentation process***.*** Requests for a ***chain-of-custody*** may be made to the laboratory and should be honored. Suggested procedures for a ***chain-of-custody*** are found in Appendix A of the ***Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition, January 2005***.

Freedom_0006049_0075

CHAIN-OF-CUSTODY SAMPLE HANDLING INSTRUCTIONS

INSTRUCTIONS FOR SAMPLING OF INORGANIC CONTAMINANTS TO MEET EPA COMPLIANCE MONITORING (SDWA)
ENVIRONMENTAL CHEMISTRY SECTION (304)965-2694

I. Introduction

Written procedures for sample handling are available and must be followed whenever samples are collected and shipped. For the purposes of litigation, it is necessary to have an accurate written record to trace the possession and handling of samples from the preparation of the kit, receiving the kit, collection of sample, packaging and mailing, laboratory receipt, analysis and reporting results. The procedures defined here represent a means to satisfy this requirement.

II. A sample is in someone's "custody" if:

1. It is in one's actual physical possession;
2. It is in one's view, after being in one's physical possession;
3. It is in one's physical possession and then locked up so that no one can tamper with it;
4. It is kept in a secured area, restricted to authorized personnel only.

II. Sample Collection, Handling, Identification, and Shipping

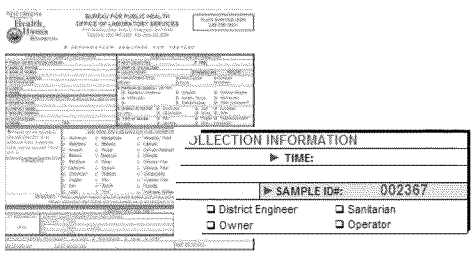
1. The laboratory person that prepared and shipped the sample collection kit has signed and dated the Chain-of-Custody (COC) Form and relinquished the kit to you, the receiving party. The person collecting the sample must sign and date COC Form upon opening the sampling kit and again after sampling to relinquish the kit to the laboratory for testing.

2. The Designated Sampler (*County or State Sanitarian, or State District Engineer*) is responsible for sampling, packaging, and dispatching samples to the Environmental Chemistry Laboratory for analysis. Instruction for sampling of inorganic contaminants to meet EPA compliance monitoring is provided. The sampler's information must be completed on the Chain-Of-Custody Form.

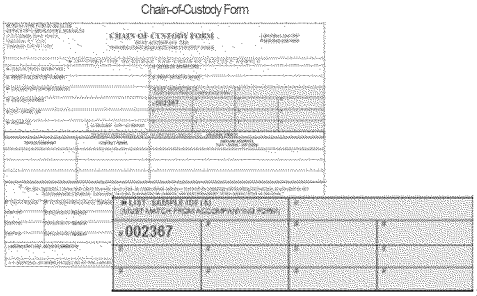
3. If a witness is present at the time of collection, he/she should sign the form.

4. The ID number(s) located on the "Information Required for Testing Form(s)", must match the sample bottle collected for each location. All samples covered under the COC must have the Sample ID #(s) listed. More than one sample location may be listed on the same COC Form.

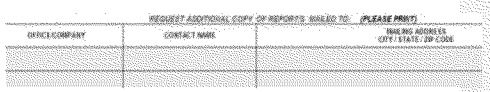
Information Required for Testing Form



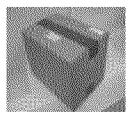
Chain-of-Custody Form



5. Copies of the results will be mailed to the Responsible Party for Billing and the Sample Collector if requested. Up to three additional copies will be mailed only if requested in writing on the COC Form with name(s) and mailing address.



6. The sample bottle(s) and completed form(s) must be placed in the appropriate plastic bags for shipment to the laboratory. Mailed packages must be shipped for overnight delivery so that we receive them on **Tuesday, Wednesday, or Thursday**. State holidays must be taken into account. The box must be sealed with mailing tape and affixed with tamper proof tape (supplied by the laboratory in the sample kit). The tamper proof tape must cover all seams, top and bottom, of the shipping container.



DO NOT ATTEMPT TO REMOVE TAMPER PROOF TAPE APPLICATION!!!

Freedom_0006049_0076

CHAIN-OF-CUSTODY EVALUATIONS

1. LABORATORY SAMPLE CONTROL PROCEDURES

1.1. Sample control procedures are necessary in the laboratory from the time of sample receipt to the time the sample is discarded. The following procedures are recommended for the laboratory:

1.1.1. A specific person must be designated as custodian and an alternate designated to act as custodian in the custodian's absence. All incoming samples must be received by the custodian/alternate, who must indicate receipt by signing the accompanying custody/control forms.

1.1.2. Once the sample is received in the laboratory, the custodian or the custodian's assistant must log in the sample and record the unique laboratory number in the logbook. For each sample a permanent In-House Chain-of-Custody Form must be maintained, to record the movement of the sample within the laboratory, who removes the sample from the custody area, when it was removed, when it was returned, and when it was destroyed.

1.1.3. The testing laboratory sub-section that can be securely locked from the outside will be designated as the "custody room."

1.1.4. The custodian must ensure that samples are properly stored and maintained prior to analysis.

1.1.5. Distribution of samples to the analyst performing the analysis must be made by the custodian.

1.1.6. The laboratory area must be maintained as a secured area, restricted to authorized personnel only.

1.1.7. Laboratory personnel are responsible for the care and custody of the sample once it is received by them and must be prepared to testify that the sample was in their possession and view or secured in the laboratory at all times from the moment it was received from the custodian until the time that the analyses are completed.

1.1.8. Once the sample analyses are completed, the unused portion of the sample, together with all identifying labels, must be retained until permission to destroy the sample is received from the custodian.

1.1.9. Samples will be destroyed only upon the order of the responsible laboratory official when it is certain that the information is no longer required or the samples have deteriorated. (For example, standard procedures should include discarding samples after the maximum holding time has elapsed.) The in-house chain-of-custody must show when each sample was discarded.

1.1.10. Procedures should be established for internal audits of sample control information. Records should be examined to determine traceability, completeness and accuracy.

1.1.11. The completed original laboratory report will be reviewed and released by the Program Manager and mailed with the original chain-of-custody form to the designated person/address on the chain-of-custody. The sample information form and copies of chain-of-custody are stapled to a copy of the lab report and filed.

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BUREAU FOR PUBLIC HEALTH
OFFICE OF LABORATORY SERVICES
4710 Chimney Drive, Suite G,
Charleston, WV 25302
Telephone (304) 965-2694

CHAIN OF CUSTODY FORM

MUST ACCOMPANY THE
"INFORMATION REQUIRED FOR TESTING" FORM

► *INFORMATION REQUIRED FOR CHAIN OF CUSTODY SAMPLE*

► COLLECTOR'S SIGNATURE: *		► WITNESS SIGNATURE:			
► PRINT COLLECTOR'S NAME:		► PRINT WITNESS NAME:			
► COLLECTOR'S OFFICE/COMPANY		► LIST SAMPLE ID# (S) (MUST MATCH FROM ACCOMPANYING FORM)		#	
► MAILING ADDRESS		#	#	#	#
► CITY / STATE / ZIP		#	#	#	#
► PHONE NO.	❑ REQUEST COPY OF REPORT	#	#	#	#

REQUEST ADDITIONAL COPY OF REPORT/S MAILED TO: ***(PLEASE PRINT)***

OFFICE/COMPANY	CONTACT NAME	MAILING ADDRESS CITY / STATE / ZIP CODE

* "By this signature, I attest that I have received, have read, do comprehend, and have executed the sampling and handling instructions as provided by the Environmental Chemistry Laboratory in order to maintain the integrity and legal defensibility of the samples listed on this form."

Date Kit Prepared:	Kit Prepared/Relinquished by (lab): Signature	
Date/Time:	Kit Received by Collector: Signature	
Date/Time:	Samples Relinquished by Collector (Mailed/Delivered): Signature	
Date/Time:	Samples Received by Sample Custodian (lab): Signature	

LABORATORY USE: (NOTES/COMMENTS)

★★ *DISPOSAL OF SAMPLES WILL BE AT THE LABORATORY'S DISCRETION, UNLESS OTHERWISE REQUESTED IN WRITING UPON DELIVERY OF SAMPLE*

File Location: S:\Bigchem\BlankForms\ChainOfCustodyForms\RevisedCOCForm.DOC Rev 2.0

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BUREAU FOR PUBLIC HEALTH
OFFICE OF LABORATORY SERVICES
4710 Chimney Drive, Suite G,
Charleston, WV 25302
Telephone (304) 965-2694

IN HOUSE CHAIN OF CUSTODY FORM

Date/Time:	Sample Custodian: signature	Stored Where:
Place Barcode Here	Place Barcode Here	Place Barcode Here
Place Barcode Here	Place Barcode Here	Place Barcode Here

Relinquished by: Signature	Received by: Signature	Date/Time:	Reason:

Date Approved for Sample Disposal:	Disposal Date:
Permission Given to Destroy Sample By:	Sample Disposed/Destroyed By:
(Name)	Method of Disposal:
(Title)	
(Address)	

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SECTION XII
QUALITY ASSURANCE MONITORING

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QUALITY ASSURANCE MONITORING

1. QUALITY ASSURANCE DEFINED:

1.1. Quality Assurance (QA) is a process of monitoring the functional components of a system and correcting defects when unacceptable performance is identified. Quality assurance is important to every phase of the laboratory operation. Quality is assessed by naming specific indicators and setting targets or thresholds for acceptable performance and measuring customer satisfaction. The limits may be set so that action is taken only when the number of deficiencies reaches a certain specified threshold. In other words, a limit may be defined as a sentinel event that requires review and action when encountered. Overall QA process involves three steps:

- Monitoring
- Problem solving
- Documentation

Monitors are data-collecting systems for the identification and documentation of problems which require solutions.

Monitors may or may not reflect problems. Monitoring may be an ongoing process of data collection with results compiled and evaluated on a routine basis.

2. MONITORING PROCEDURE

2.1. Quality Assurance Monitoring is a program to ensure that every phase of the testing process is monitored to produce the best possible test result. The program monitors the pre-analytical, analytical, and post analytical phases of the testing process.

2.2. Suggested Sample Test Monitors:

PHASES	INDICATOR
Pre-Analytical	Collection/Mailing Kit Contents, Proper Type Sample, Proper Sample Collection, Proper Packaging/Shipping, Transit Time, Date of Collection Information, Provider Name/Address, Sample Identification, Sample Adequacy
Analytical	Quality Control, Instrument/Equipment Maintenance & Calibration, Controlled Temperature Monitoring, Technical Procedure Manual, Test Verification, Evaluation Results
Post Analytical	Test Report Accurate, Test Report Legible, Report Addenda Intelligible, Reports Retrievable, Turn-around Time, Reports mailed to proper address

2.3. Areas within the analytical phases that are important to the process but not directly related to the samples themselves are customer satisfaction, employee competency, and resource management. Measurement of these may be:

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2.3.1. Customer Satisfaction:

- Telephone Calls
- Written Letters/Notes
- Questionnaires

2.3.2. Employee Competency:

- Employee Training
- Performance Review
- External PTWS
- Studies
- Competency Assessment

2.3.3. Resource Management:

- Workload
- Budget
- Order Turn-around Time
- Accuracy of Supply Orders
- Accuracy of Filling Order

3. PERFORMANCE OF MONITORING

3.1. Each section lead worker shall be responsible for establishing a QA monitoring system. The supervisor may assign to the testing personnel specific monitoring related to their job assignment.

3.2. Monitoring can be done daily as samples are received and processed. Some monitoring can be done by "batch" on a weekly basis. For example, from a computer print-out, a number of indicators can be monitored, such as turn-around time, transit time, unsatisfactory samples, accuracy of data-entry, and others.

3.3. The QA process involving monitors consists of six key elements:

3.3.1. Make a problem statement: e.g., "Providers are using the obsolete requisition form which has no collection date entry". Follow this with a positive statement which includes the target or threshold: "____% of providers will submit samples with the new requisition form." If no problem is recognized for the item to be monitored, make a positive statement, e.g.: "____% of specimens have patient name."

3.3.2. Collect data: Establish a monitor sheet, e.g., a log sheet is placed in the processing area to record data relating to the indicator being monitored;

3.3.3. Evaluate data: Establish a time period for monitoring and investigate the data at the end of the designated time;

3.3.4. Take action: Try to resolve the issue;

3.3.5. Evaluate effectiveness: Determine whether or not problem has been resolved;

3.3.6. Follow-up: Do spot checks, e.g. The problem will be considered resolved when three consecutive spot checks indicate that the threshold has been met.

4. EXAMPLE: CORRECTION RESULT REPORTS

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4.1. Make a problem statement: Since generation of computer reports there is more chance for error. Correction of errors may delay mailing of reports. What percentage of these errors are clerical and what percentage are technical errors?
4.2. Establish a monitor: Place a log-sheet at the sign-out desk for documentation of all errors. Record date, type of error (technical or clerical) and persons involved in the error. Leave in place for one month before review of data.
4.3. Investigate data: Data may indicate, for instance that 80% of the errors are typing or clerical errors. Errors are divided evenly among technologists. Many errors involve the same computer codes.
4.4. Take action: Several computer mnemonics are changed to eliminate confusion. All personnel receive in-service education about the problem.
4.5. Evaluate effectiveness: After in-service, collect data for another month. Determine if percentage of errors is reduced and if still evenly distributed among technologists.
4.6. Follow-up: Spot check throughout the next several months to a year until three consecutive assessments show no increase in error rate or type.

These examples are fairly simple and straightforward. Some are more complex and may involve sections. If so, there must be cooperative effort to solve problems.

5. EVALUATING THE DATA DERIVED FROM MONITORING

Evaluating the monitoring data should answer the question: "What levels, patterns, or trends are demonstrated by the data collected that indicate an opportunity for improvement or a problem of quality management that needs to be addressed?" In simple terms, the data shows what, if anything, needs correction or improvement.

In order to evaluate data, a standard must be established. Measurable criteria or standards by which monitors may be evaluated are called THRESHOLDS. Using a threshold as a yardstick for evaluating QA indicator data, is comparable to using rules for evaluating QC data at the bench, such as Westgard's rules.

Threshold is usually reported as percentage of variation, but other control parameters can be used, depending on the indicator used: standard deviation indices (SDI); turn-around time units; temperature ranges; case numbers, etc.

In establishing a threshold value, it is important to recognize that most medical processes have some variability that cannot be completely controlled. Striving for zero defects, while desirable, is unrealistic. (For a high-risk, sentinel event indicator, a zero percent tolerance of variation is warranted.)

6. DOCUMENTATION OF QUALITY ASSURANCE

The Quality Feedback Form (QF Form) serves as the overall documentation form for the Quality Assurance Program. The form shown on the next page is a universal form for the documentation.

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The QF Form may be used for: Problems, Accidents, Concerns, Complaints, Quality Concerns, Monitors and can be used to document and share information related to quality assurance. Other appropriate documentation is acceptable and may be more appropriate.

EPA regulations require that quality assurance documents be retained for at least five years. Each section should maintain a notebook or file of QF Forms that have been returned.

7. THE QUALITY FEEDBACK FORM

The Quality Feedback Form shown on page 83 serves as a mechanism to collect information to improve the quality of services provided by the Office of Laboratory Services. Copies of completed forms will be reviewed at regularly scheduled QA meetings.

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QUALITY FEEDBACK FORM (QFF)

Employee Name:_____Date:_____

Issue Category:
Customer Feedback
Sample Submission
Sample Result Generation
Sample Result Reporting
Other

Frequency of Occurrence:

This issue has occurred (Please Choose One)

Once

_____ times a (DAY) (WEEK) (MONTH)

Issue Impact:

This issue impacts (Please Choose One)

(One) (< 50%) (> 50%) (All) External Customers

One Person

Everyone in one lab

Everyone in an OLS building

Everyone in OLS

Issue Description:
Please provide an explanation of the issue. If this is related to customer feedback please provide copies of any documentation received from the customer (Letters, emails, etc.)

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8. QUALITY ASSURANCE MANAGEMENT

Staff will meet as needed to discuss quality assurance issues. A summary of the meeting will be kept and forwarded to the OLS Management (QM) Team.

9. QUALITY MANAGEMENT TEAM

The Office of Laboratory Services has a Management Team made-up of supervisors, administration and other persons as appointed. The Management Team will provide quality leadership to the OLS to facilitate good customer service and quality tests results. Minutes and information from the meetings will be shared with all employees and suggestions for improvement in laboratory operations will be solicited from all employees. The Management Team meetings will serve as the major communication mechanism between administration and staff.

10. QUALITY ASSURANCE COMMITTEE

A Quality Assurance (QA) Committee will be established to periodically review quality assurance activities and to share quality information with laboratory staff. The QA Committee or section supervisor will also initiate system audits for peer review and assist with any needed corrective action.

11. MANAGEMENT PROCESS

Quality Assurance monitoring is an active and on-going process that involves all employees and is facilitated by the administration, the QA Committee.

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SECTION XIII

DATA REDUCTION, VALIDATION, REPORTING, AND STORAGE

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DATA REDUCTION, VALIDATION AND REPORTING

1. DATA REDUCTION

Data reduction is performed by the individual analysts and consists of calculating concentrations in samples from the raw data obtained from the measuring instruments. The complexity of the data reduction will be dependent on the specific analytical method and the number of discrete operations (e.g., extractions, dilutions, and concentrations) involved in obtaining a sample that can be measured. The analyst will reduce or calculate all raw data into the final reportable values. All raw data and the calculations used to generate the final results, such as hardbound lab notebooks, strip-charts and chromatograms will be retained on file to allow reconstruction of the data reduction process at a later date. These raw data shall be kept on file for easy access for at least five years or until after the next scheduled on-site audit by the EPA certifying authority, whichever is longer.

After proper calibration, some instruments are able to produce data directly in reportable form. However, some instruments supply only a signal that must be interpreted and/or recorded by the analyst.

The signal produced by the instrument may be digital or analog. The digital response is documented directly on instrument printouts or recorded into log books. Analog data may be in the form of chart recordings, which are converted, either electronically or manually by the analyst, to digital form and then documented. In either case, the analyst must still convert this signal to a final reportable form by either electronic calculator or computer.

2. DATA VALIDATION

Before reporting any data onto the lab report forms, the analyst is responsible for verifying the acceptability of all required method/SOP outlined quality control checks. The overall accuracy of the method is evaluated by processing fortified reagent water through the entire analytical scheme and comparing the results to established method/SOP requirements.

If all data is within the acceptance limits, the analyst continues with data reduction. If not, they must attempt corrective action or repeat the analytical run. The calculations/results are confirmed and documented by the analyst and entered into the appropriate logbook. The last responsibility of the analyst is to ensure that no mistakes have occurred in sample number or raw data. All data results for compliance monitoring samples that exceed the Maximum Contaminate Level must be cross-checked by a second analyst for errors and initialed by the checker before reports are forwarded to the supervisor.

The laboratory Program Manager/supervisor is responsible for reviewing all logbooks to ensure that the analysts are fulfilling their responsibilities. It is also the responsibility of the laboratory Program Manager/supervisor to periodically review the finished bench sheets for anomalous values and overall quality.

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Data that requires corrections will be documented on the original raw data, bench sheet, form, or report by drawing a line through the original data, recording date of correction and initial. The Program Manager/supervisor will evaluate the severity of the data error and determine if the Quality Feed Back Form is required for further investigation.

3. DATA REPORTING

3.1. For data reporting, rounding will not be performed until after the final result is obtained to minimize rounding errors, and numeric results will not normally be expressed in more than two (2) or three (3) significant figures. All results will be reported with the proper measurement units (e.g., mg/l, µg/l, Present, Absance.etc.). Results below the minimum reporting level will be reported as less than that value.

3.2. Significant figures: All reported analytical values should contain only figures which are known to be reasonably reliable. Significant figures consist of all digits that are definitely known and one last digit which is estimated. Significant figures reflect the limits in accuracy (reliability) of the particular method of analysis and measuring instruments. Once the number of significant figures obtainable from a type of analysis is established data resulting from such analyses are reduced and reported according to scientific rounding rules.

4. DATA STORAGE

All printed instrument raw data and logbooks are kept in safekeeping by the section responsible for those parameters. All lab reports and Chain-of-Custody Forms are filed upon completion in the office. Analysis data, logbooks, reports (paper/electronic), and Chain-of-Custody Forms are cataloged and maintained for a minimum of five years. All electronic reports and databases are retained on computer servers which are backed up weekly by the State of West Virginia Office of Technology.

While EPA has no specific regulation for quality assurance documents, section 8.2 of Chapter IV, CLADW., covers data retention times (all data should be easily accessible for at least 5 years).

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SECTION XIV

NETWORK SECURITY AND SOFTWARE SUPPORT

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NETWORK SECURITY AND SOFTWARE SUPPORT

1. **NETWORK SECURITY:** All Information Technology (IT) policies developed, maintained, and distributed within the Department of Health and Human Resources (DHHR) are governed by the West Virginia Office Management Information Services (OMIS). OMIS is responsible for establishing and coordinating IT policies. Final authority lies with the Chief Technology Officer. The Operations unit, under DHHR Deputy Secretary for Administration, is responsible for communicating IT policies to all DHHR employees. IT policies and procedures for DHHR are available at http://www.wvdhhr.org/mis/IT/index.htm

2. **SOFTWARE SUPPORT:** Original instrument manufacturer software packages should be made available to limit instrument downtime in case of computer hardware failures or reinstallation in cases of software corruption. Key operating software components, which could be but not limited to method files, tuning parameters, run schedule, etc… should have replicate copies or have documentation available to limit instrument downtime incase of catastrophic system failures.

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SECTION XV
PREVENTIVE MAINTENANCE

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PREVENTIVE MAINTENANCE

1. **RESPONSIBILITY:** The person appointed by the program manager/section supervisor as having primary responsibility shall determine from the manufacturer's manual for each piece of equipment what maintenance procedures shall be recorded in notebooks kept for that instrument. All manufacturer instrument operating, maintenance, and software manuals are stored within each section and/or the Maintenance Department.

2. **DOCUMENTATION:** Should the instrument require service, the laboratory director, section supervisor, or program manager should be notified. Instrument service contracts are reference below. All repairs will be outlined and documented by the person responsible for the instrument.

3. **MAINTENANCE:** Based upon the recommendations in the manufacturer's manual and the judgment of the program manager/section supervisor, spare consumables will be available to limit instrument downtime to maintain the laboratory's continuation of operation.

4. **SERVICE CONTRACTS**

Service Provider	Instrument/Model	Currently Active: (Yes/No)
CETAC Technologies	M-6100 Mercury Analyzer	Yes
Teledyne Tekmar Co.	Phoenix 8000 TOC Analyzer	Yes
JASCO Inc.	Spectrometer Model V-530	Yes
Steris	Autoclave/2052	Yes
Steris	Autoclave/3051	Yes
Steris	Autoclave/American	Yes
Steris	Glassware Washer/570	Yes
Brechbuhler Scales, Inc.	All Laboratory Balances	Initiated Annually (March)

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SECTION XVI

INTERNAL QUALITY CONTROL AND CORRECTIVE ACTION

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INTERNAL QUALITY CONTROL CHECKS

For the analysis of contaminants within the analytical system a method blank and laboratory fortified sample blank is run. All Quality Control Checks are run according to the requirements specified by each method/SOP. Within each SOP the frequency of analysis, preparation, acceptance limits, and corrective action procedures for unacceptable results, and documentation are defined. Quality Control data is maintained and used for QA validation. In addition, analysis of a Proficiency Testing (PT) sample for all regulated parameters is carried out annually as required by EPA to maintain certification. PT results are to be forwarded directly from the approved provider to the Region 3 office.

1. INITIAL DEMONSTRATION OF CAPABILITY

Before beginning analysis of regulatory compliance samples an initial demonstration of capability for each parameter by each method is documented to show all method/SOP quality objectives are within established criteria.

The IDC should include a demonstration of the ability to achieve a low background, precision and accuracy, method detection limit, and the analysis of an unknown. Each item should be described in detail in each methods/parameters SOP where applicable. This should include the frequency of analysis, preparation, acceptance limits, and corrective action procedures for unacceptable results.

All IDC data is reviewed by the program manager/supervisor and compared to the acceptance criteria outlined in the method/SOP or QA plan. If all data meets the quality objective of the QA Plan and method/SOP the analyst is deemed competent and approved for regulatory compliance sample analysis.

2. CORRECTIVE ACTION

2.1. When errors, deficiencies, or out-of-control situations exist, the QA program provides systematic procedures to resolve problems and restore proper functioning to the analytical system. Laboratory personnel are alerted that corrective actions may be necessary if:

- QC data are outside the acceptable windows for precision and accuracy
- Field reagent blanks and/or laboratory reagent blanks contain contaminants above acceptable levels.
- Undesirable trends are detected in spike recoveries or between duplicates
- There are unusual changes in detection limits
- Deficiencies are detected from the results of Proficiency Testing studies

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2.2. Corrective action procedures are handled at the bench level by the analyst, who reviews the preparation or extraction procedure for possible errors, checks the instrument calibration, spike and calibration mixes, instrument sensitivity, and so on. If the problem persists or cannot be identified, the matter is referred to the Program Manager/supervisor for further investigation. Once resolved, the corrective action procedure is documented fully for future review and referral.

ENVIRONMENTAL CHEMISTRY

LABORATORY DUPLICATES	Two sample aliquots taken in the analytical laboratory and analyzed separately with identical procedures. Analyses of lab duplicate 1 and lab duplicate 2 give a measure of the precision associated with laboratory procedures, but not with sample collection, preservation or storage procedures.
FIELD DUPLICATES	Two separate samples collected at the same time and placed under identical circumstances and treated exactly the same throughout field and laboratory procedures. Analyses of field duplicate 1 and field duplicate 2 give a measure of the precision associated with sample collection, preservation and storage, as well as with laboratory procedures.
LABORATORY REAGENT BLANK (LRB)	An aliquot of reagent water that is treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents, internal standards and surrogates that are used with other samples. The LRB is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.
FIELD REAGENT BLANK (FRB)	Reagent water placed in a sample container in the laboratory and treated as a sample in all respects, including exposure to sample site conditions, storage, preservation and all analytical procedures. The purpose of the FRB is to determine if method analytes or other interferences are present in the field environment.
LABORATORY PERFORMANCE CHECK SOLUTION	A solution of method analytes, surrogate compounds, and internal standards used to evaluate the performance of the instrument system with respect to a defined set of method criteria.
LABORATORY FORTIFIED BLANK (LFB)	An aliquot of reagent water to which known quantities of the method analytes are added in the laboratory. The LFB is analyzed exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate and precise measurements.
LABORATORY FORTIFIED SAMPLE MATRIX, (LFM)	An aliquot of an environmental sample to which known quantities of the method analytes are added in the laboratory. The LFM is analyzed exactly like a sample and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured value in the LFM corrected for background concentrations.
QUALITY CONTROL SAMPLE (QCS)	A sample matrix containing method analytes or a solution of method analytes in a water miscible solvent which is used to fortify reagent water or

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	environmental samples. The QCS is obtained from a source external to the Laboratory and is used to check laboratory performance with externally prepared test materials.
MINIMUM REPORTING LIMIT (MRL)	An aliquot of reagent water is spiked with a concentration of analyte that is equal to the lowest calibration standard used in the daily calibration of the instrument. The MRL is used to verify the Laboratories Reporting Limit.

MICROBIOLOGY

3. **PRECISION AND ACCURACY:** Within this laboratory a variety of QCs are utilized to maintain proper precision and accuracy. Blanks, spikes, matrix spikes, duplicates, replicates, check standards, and Proficiency Testing samples are all part of the laboratory's on-going demonstration of capability.

4. **PRECISION MONITORING:** The routine analysis of duplicate samples generates information on reproducibility of laboratory data. The results of duplicate analyses of samples of comparable materials are available to generate statistical measurements of precision. Data for duplicate analyses are maintained and monitored on a continuing basis.

5. **ACCURACY MONITORING:** Matrix spikes, quality control standards, and Proficiency Testing samples all provide information on the accuracy of the analytical procedures and equipment. Results are recorded in laboratory notebooks for on-going accuracy monitoring. Control limits used are those specifically determined by a given method/SOP.

6. **DOCUMENTATION**: Documentation of the quality control system may include the analyst corrective action taken for unacceptable results, recorded quality control results, solution preparation notebook, and/or the Certificate-of-Analysis for reagents and quality control samples. All of which should be made available for easy review.

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SECTION XVII
PROFICIENCY TESTING

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PROFICIENCY TESTING PROCEDURE

1. **TESTING PERIOD AND REPORTING:** EPA Region 3 must receive at least one acceptable Proficiency Testing Water Study (PTWS) result for all certifiable parameter(s) and by all method(s) for which this laboratory holds, or is seeking, certification by October 1st of each year. This laboratory must participate in a PTWS for each certified parameter within the first three months of the calendar year, which has a closing date no later than March 31st. The provider of the PTWS must be acceptable to the EPA Office of Ground Water and Drinking Water. A copy of the PTWS report must be submitted directly from the provider to the Regional Quality Assurance Office, 3ES10, at USEPA, Region 3, 1650 Arch Street, Philadelphia, PA 19103-2029. A copy must also be submitted directly from the provider to the USEPA Region III Technical Director, Environmental Science Center, Analytical Services and Quality Assurance Branch, 701 Mapes Road, Fort Meade, MD 20755-5350.

2. **ANALYSIS:** PTWS samples are to be treated as normal drinking water samples. A PTWS sample shall be analyzed the same number of times as a routine drinking water compliance monitoring sample. The laboratory must analyze the sample by the approved method/SOP/instrument used by the laboratory for routine drinking water tests. When reporting results to the PTWS provider, the method's edition and revision, or section shall be included.

3. **CORRECTIVE ACTION REPORT:** If a parameter, for which the laboratory has certification, is unacceptable in any PTWS report, a Corrective Action Report (CAR) must be written that describes the action taken by the laboratory to address and correct the problem. The CAR must be signed by the program manager/supervisor and a copy submitted to the Laboratory Director and the Regional Quality Assurance Office within 30 days of receiving an unacceptable report.

4. **MAKE-UP PROFICIENCY STUDY:** A make-up PTWS must be analyzed for any parameter with unacceptable results on the initial PTWS. If the laboratory passes the make-up PTWS before October 1st, "certified" status is retained. If the make-up PTWS fails, the status is downgraded to "provisionally certified". If the 2nd make-up PTWS passes before October 1st, the status is upgraded to "certified" for the year. If the 2nd make-up PTWS fails, the status is further downgraded to "not certified". After being downgraded to "not certified" for any parameter, all SDWA analysis for that parameter must cease and clients must be directed to the services of other certified laboratories.

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SECTION XVIII

ACRONYMS AND DEFINITION OF TERMS

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ACRONYMS

CAR Corrective Action Report

DHHR Department of Health and Human Resources
DOP Division of Personal

EPA Environmental Protection Agency

FC+ Fecal coliform positive
FC- Fecal coliform negative
FDA Food and Drug Administration
FRB Field Reagent Blank

GW Groundwater
GUDI Groundwater Under Direct Influence

HPC Heterotrophic Plate Count

ID Identification
IDL Instrument Detection Limit

LFB Laboratory Fortified Blank
LFM Laboratory Fortified Sample Matrix
LRB Laboratory Reagent Blank

MCL Maximum Contaminant Level
MCLG Maximum Contaminant Level Goal
MDL Method Detection Level

NPDWR National Primary Drinking Water Regulations

OEHS Office of Environmental Health Services
OLS Office of Laboratory Services
OSHA Occupational Safety and Health Administration

PT Proficiency Testing
PTWS Proficiency Testing Water Study
PWS Public Water System

QA Quality Assurance

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QC Quality Control
QCS Quality Control Sample
QF Quality Feedback Form
QM Quality Management

MRL Minimum Reporting Limit

SDWA Safe Drinking Water Act
SDWIS Safe Drinking Water Information System
SOP Standard Operating Procedure
SW Surface Water
SWEET Safe Water Electronic Entry Tool
SWTR Surface Water Treatment Rule

TC Temperature Control
TC+ Total Coliform positive
TC- Total Coliform negative
TCR Total Coliform Rule
TNTC Too-Numerous to Count

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DEFINITION OF TERMS

Accuracy
This is a measurement of the closeness of an individual result or the average of a number of results to the true value.

Calibration
Comparison of a measurement standard, instrument, or item with a standard or instrument of higher accuracy to detect and quantify inaccuracies and to report or eliminate those inaccuracies by adjustment.

Certifying Authority (CA)
This is a designee who has the authority to certify a laboratory conducting drinking water analyses.

Certification Officer (CO)
A person who evaluates laboratories to determine if they meet the criteria established in the NPDWR and within the policy requirements of this manual. This person must pass the certification officers training course provided by U.S. EPA Laboratory in Cincinnati, Ohio.

Chain-of-Custody
An unbroken trail of accountability that ensures the physical security of samples, data, and records.

Contaminant
Any physical, chemical, or biological substance or matter in water that is of public health or welfare concern.

Corrective Action Report (CAR)
This is a report that describes the actions taken to rectify conditions adverse to quality and where possible, to preclude their recurrence.

Community Water System
Public water system that serves at least 15 service connections used by year –round residents or regularly serves at least 25 year-round residents.

Data Audit
A qualitative and quantitative evaluation of the documentation and procedures associated with measurements to verify that the resulting data are acceptable.

Data Quality Objectives
Qualitative and quantitative specifications used to design a study that will limit uncertainty to an acceptable level.

Data Reduction
The process of transforming the number of data items by arithmetic or statistical calculation, standard curves, concentration factors, etc. and collation into a more useful form. Data reduction is irreversible and generally results in the loss of detail.

Document

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Any written information describing, defining, reporting, certifying activities, requirements, or procedures results.

Groundwater

Subsurface water found in the saturated zone of a defined aquifer.

Groundwater – Under Direct Influence of surface water (GUDI)

Any water beneath the surface of the ground with (1) significant occurrence of large-diameter pathogens such as Giardia lamblia, or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Heterotrophic bacteria

A broad class of aerobic and facultative anaerobic organisms which use organic nutrients for growth. The group includes many innocuous bacteria, as well as virtually all of the bacteria pathogens. These bacteria infect when the host defenses are weakened.

Heterotrophic Plate Count (HPC)

The number of heterotrophic bacteria contained in a water sample.

Holding Time

The allowed time form when the sample was taken (or extracted) until it must be analyzed.

Initial Demonstration of Capability (IDC)

Before analyzing compliance samples a qualified technician must demonstrate the ability to achieve a low background, acceptable precision and accuracy specified for the method to be used, and determination of an MDL.

Instrument Detection Limit (IDL)

The concentration equivalent to the analyte signal which is three times the standard deviation of a series of ten replicate measurements of the calibration blank at the same wavelength.

Laboratory Reagent Blank

An aliquot of reagent water or other blank matrix that is treated exactly as a sample to determine if method analytes or other interferences are present.

Laboratory Fortified Blank

An aliquot of reagent water or other blank matrix to which known quantities of the method analytes are added in the laboratory. The LFB is analyzed exactly like a sample to determine whether the method is in control.

Manual for the Certification of Laboratories Analyzing Drinking Water (CLADW)

This manual is written by the EPA Office of Ground Water and Drinking Water and describes the implementation of the Drinking Water Laboratory Certification program, including the procedures a laboratory follows and the criteria a laboratory must meet to be certified to analyze drinking water compliance samples.

Maximum Contaminant Level

Maximum contaminant level means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Monitoring Trigger

The concentration of a regulated contaminant which triggers additional monitoring.

Method

This is an analytical procedure that is approved to analyze drinking water for the purpose of compliance monitoring.

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Method Detection Limit (MDL)

The minimum concentration, of an analyte that can be identified, measured and reported with 99% confidence, that the analyte concentration is greater than zero.

On-Site Audit

To assure the laboratory is maintaining the required standard of quality the certifying authority will conduct an on-site evaluation of the facility.

Precision

The reproducibility in a series of results, that will establish whether the testing method gives the same result under the same set of preparation and/or analytical conditions or sampling criteria.

Proficiency Testing Water Study (PTWS)

A sample provided to a laboratory to demonstrate that the laboratory has the ability to successfully analyze it within the acceptance limits listed in the NPDWR

Public Water System

A system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily as least 60 days out of the year.

Quality Assurance Plan (QA)

A document that describes management activities that involves planning, implementing, assessing, reporting and improving quality to ensure that a process, item, or service is of the type and quality needed and expected.

Quality Control

The overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of the user; operational techniques and activities that are used to fulfill requirements for quality.

Scientifically Valid and Defensible

The data generated by the laboratory follows all the mandatory and recommended procedures within the approved method, CLADW, NPDWR, laboratory SOP and the policy within this manual.

Standard Operating Procedure

A written document that details the method for an operation, analysis, or action which thoroughly describes techniques and steps, and is officially approved as the method for performing certain routine or repetitive tasks through the pre-analytical, analytical, and post-analytical steps.

Validation

Confirmation, by examination and provision, of objective evidence that specified requirements have been fulfilled. In design and development, verification concerns the process of examining a result of a given activity to determine conformance to the stated requirements for that activity.

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